ऑयल इंडिया
OIL INDIA

KG BASIN PROJECT
Down Town Building, 3rd Floor,
D. No. 70–14–16/4, Sri Vidya Colony,
Venkat Nagar, Kakinada -533003,
Andhra Pradesh, India
E-mail: *kgbasin@oilindia.in*

Ref: OIL/KGB/C&P/144/2026 **Date: 28.05.2026**

NOTICE INVITING PARTICIPATION

IN

PRE-TENDER MEETING

FOR TENDER PROPOSED TO BE FLOATED FOR HIRING

OF

BUNDLE SERVICES TO SUPPORT DRILLING OPERATIONS IN ULTRA DEEPWATER BLOCKS (KG & MAHANADI)

UNDER INTERNATIONAL COMPETITIVE BIDDING (ICB) PROCESS

Dear Sirs,

1.0 OIL INDIA LIMITED (OIL), a "**Maharatna**" Category, Government of India Enterprise, is a premier Oil Company engaged in the exploration, production and transportation of crude oil & natural gas with its Headquarters at Duliajan, Assam. Oil India Limited (OIL)'s Project office located at Kakinada is presently entrusted to coordinate activities related to the exploration and production of oil and natural gas from the Krishna Godavari onland and offshore, Mahanadi onland and offshore, Andaman offshore and Kerala-Konkan offshore basins in India. The Project Office of OIL at Kakinada is well connected by road, rail and air.

2.0 OIL has been awarded four offshore ultradeep exploration blocks, namely MN-UDWHP-2023/2, MN-UDWHP-2023/3, KG-UDWHP-2023/1, and KG-UDWHP-2023/2, located in the Mahanadi and Krishna-Godavari (KG) basins under the OALP-IX bidding round. OIL is the sole participating company in all the above-mentioned blocks, holding 100% participating interest. Apart from the above blocks, the Company will also be participating in future OALP bidding rounds for exploration in other offshore blocks in the near future. For carrying out drilling operations in the ultradeep offshore blocks, including any other operational areas along the Indian East and West Coasts, a tender is proposed to be floated under an International Competitive Bidding (ICB) process. In this regard, a Pre-Tender Meeting is scheduled to discuss the requirements of OIL with interested prospective bidders and to understand the bidders' perspectives, including exchange of views, suggestions, and clarifications, if any.

Details of the pre-tender meeting:

Date: **15.06.2026**

Venue: **OIL's KG Basin Project Office at Down Town Building, 3rd floor, Door No. 70–14–16/4 (Next to D-Mart), Sri Vidya Colony, Venkat Nagar, Kakinada, Andhra pradesh – 533003, India**

Time: **11:00 HOURS IST onwards.**

At most three (03) representatives from each prospective bidder shall be allowed to participate in the Pre-Tender Meeting. All costs for attending the Pre-Tender Meeting shall be to the account of the prospective bidders. Foreign bidders may also request OIL for an invitation letter, if required, for the purpose of obtaining a visa to attend the Pre-Tender Meeting.

Prospective bidders may also attend the Pre-Tender Meeting through Video Conference (VC). The VC link for the Pre-Tender Meeting shall be communicated to the nominated representatives closer to the scheduled date of the Pre-Tender Meeting, against a request sent to the e-mail ID: kgbasin@oilindia.in .

3.0 A draft of the **Terms of Reference / Technical Specifications / Scope of Work**, **Special Conditions of Contract (SCC)** and **Bid Evaluation Criteria (BEC)** is enclosed as **Annexure-I** and **Annexure-II** for the reference of the prospective service providers.

4.0 OIL now looks forward to active participation of service providers in the pre-tender meeting.

Thanking you.

Yours faithfully,
OIL INDIA LIMITED

Sd/-

(Mr. A L Bora)
Chief Manager-C&P (KGB)
for Chief General Manager (C&P)
for Executive Director (Offshore) OALP, MBP, KGB DSF

TERMS OF REFERENCE / TECHNICAL SPECIFICATIONS / SCOPE OF WORK

(DRAFT)

1.0 PREAMBLE

OIL INDIA LIMITED (OIL), an integrated National E&P Company, has been carrying out exploration & development activities for oil & gas, since the early fifties. It is also engaged in production & transportation of crude oil & natural gas as well as production of LPG. OIL has major share of its E&P activities in Assam & Arunachal Pradesh, besides activities in rest of India and abroad. OIL was awarded four (4) offshore **blocks MN-UDWHP-2023/2, MN-UDWHP-2023/3, KG-UDWHP-2023/1 and KG-UDWHP-2023/2** under the OALP-IX bidding round. OIL is sole Operator of these blocks with 100% Participating Interest.

The cumulative committed work programme (CWP) for above blocks includes drilling of exploratory wells. This Section establishes the scope and schedule for the Work to the Company performed by the Bidder / Contractor and describes the specifications, instructions, standards and other documents including the specifications for any materials, tools or equipment, which the Bidder / Contractor shall satisfy or adhere to in the performance of the Work.

2.0 PROGRAMME DESCRIPTION

The drilling programme includes drilling, evaluation, plug and abandonment of wells to tentative total Depths ranging from 7100m to 7800m. Provisional drilling schedule of initial 5 wells is given below. All the wells will be drilled with Ultra Deepwater Drillship drilling unit(s).

Well	Block	Tentative Well Depth-TD (m)	Water depth, m
KG_UDW_01	KG-UDWHP-2023/1	7200	2830
KG_UDW_02	KG-UDWHP-2023/2	7100	2960
MN_UDW_02	MN-UDWHP-2023/2	7450	2775
MN_UDW_03	MN-UDWHP-2023/3	7400	2675
MN_PARAM_04	MN-UDWHP-2023/2	7400	2876

3.0 SERVICE REQUIREMENT/ DURATION OF THE CONTRACT

During the tenure of the Contract, Bundled Services of Contractor will be called for Two (2) Drillships in staggered manner. First Drillship and associated bundled services shall be tentatively deployed by June 2027 and the second Drillship and associated bundled services shall be deployed tentatively by April 2028. The number of wells expected to be serviced are 4 (four) for first Drillship and 4 (four) for second Drillship.

Duration of Bundled Services under the instant Contract shall be for 3 years from the date of Commencement of the Contract with provision, at the sole option of Company, for extension up to one (1) more year at same rates, terms and conditions subject to Clause 2.5 of Special Terms & Conditions (SCC) of the Contract.

The concurrent operations for providing Bundled Services at two Drillships are envisaged for a period of 18 months during the 3 years tenure of the Contract. At second Drillship, Contractor will be required to deploy certain additional regular Bundled Services as detailed in the Scope of Work. However, Specialised/ Call out/ Contingency/ Optional Services along with its equipment and manpower shall be shared between the two Drillships for the sake of operational efficiency.

The extent of Bundled Services to be provided by Contractor has been divided into two parts. In the first part, the full service requirement is worked out considering 6 wells in 3 years duration. In the second part which primarily covers concurrent operations for 18 months, the requirement of additional regular services is estimated for 2 wells. However, for Well Test services, the combined requirement for 8 wells is listed in the first part itself.

4.0 AREA OF OPERATION

The Work is to be performed in **offshore Blocks MN-UDWHP-2023/2, MN-UDWHP-2023/3, KG-UDWHP-2023/1 and KG-UDWHP-2023/2** referred to as the Contract Areas in accordance with the drilling program and anywhere in Indian waters.

5.0 LOGISTICAL SUPPORT / SUPPLY BASES

Company shall operate from third party operated shore base at Kakinada, Andhra Pradesh, from which all well materials such as casing, bits, mud chemicals, liquid mud, cement, potable water and fuel shall be transported by Company hired vessels.

Helicopter services will be operated from Visakhapatnam / Bhogapuram / Bhubaneshwar.

6.0 WELL ENGINEERING

6.1 WELL OBJECTIVES

- Drill the exploration wells as outlined in the summary Drilling Program.
- Evaluate potential hydrocarbon reservoirs as per Evaluation Program.
- Complete, Test and Abandon the wells as per the Drilling / Completion / Testing Program requirements.

6.2 WELL DETAILS

The position of the firm identified well location is furnished below:

- Location name: MN-Param-4
- Type: Firm
- Water Depth: 2855m
- Target Depth: 7430m TVD-RT
- Latitude: 16° 07' 47.4705"N
- Longitude: 85° 02' 22.5803"E
- Expected pore pressure at TD is 9.0 lb/gal EMW
- Expected BHT at TD – approx. 126-153° C
- Presence of H2S and CO2 - Unlikely

Remaining wells' program will be confirmed nearer the time of commencement of Work.

6.3 PROPOSED CASING PROGRAM (SUBJECT TO CHANGE)

The Table below shows the casing program for the MN-Param-4 well.

Table 1: Tentative Casing Program, well MN-Param-4 Water Depth = 2855m

Casing Size (inch)	Hole Size (inch)	Shoe Depth from RT (m)
36" jetted	Jetted	2900
20" Casing	26"	3900
16" liner	17-1/2"x 20"	4900
13-3/8" / 13-5/8" Casing	14-3/4" x 17-1/2"	5900
9-5/8" / 9-7/8" Casing	12-1/4"	6700
7" liner	8-1/2"	7430
4-1/2" liner	5-7/8"	7800

Well engineering is in progress at this time for remaining wells and same will be shared with successful bidder nearer the time.

6.4 TENTATIVE MUD PROGRAMME

Casing and Hole Size	Mud program
36" Conductor Casing jetting with 26" drill ahead tool	Sea water and sweeps
26" hole x 20" casing	Sea water and sweeps
20" hole x 16" Liner	9.0 -9.2 lb/gal SOBM
17-1/2" hole x 13-3/8" /13-5/8" casing	9.2 -10.8 lb/gal SOBM
12-1/4" hole x 9-5/8" / 9-7/8" casing	12.0-12.5 lb/gal SOBM
8-1/2" hole x 7" liner	13.0 – 13.5 lb/gal SOBM
5-7/8" hole x 4-1/2" liner	13.0 – 13.5 lb/gal SOBM

7.0 SERVICES TO BE INCLUDED IN BUNDLED SERVICES CONTRACT

The following list of services are to be provided within the scope of this tender. Scopes of work for each individual service can be found in the appropriate exhibit, as shown below:

Cementing services	Exhibit 1
Casing Accessories	Exhibit 2
Casing & Tubing Running services	Exhibit 3
Drilling Rental tools, Hole Openers/Under Reamers, MACB & WBCO Services	Exhibit 4
Directional services /MWD/ LWD	Exhibit 5
Mud Engineering Services	Exhibit 6
Drill bits & Bi-center bits on consignment basis	Exhibit 7
Liner hanger services	Exhibit 8
Mud logging services	Exhibit 9
Subsea wellheads and conductor pipe supplies	Exhibit 10
Well-testing services, surface and downhole tools on consignment basis	Exhibit 11
Fishing & Milling tools rental services	Exhibit 12
Wireline logging & Perforation services	Exhibit 13
Coring, Core Handling & Core Stabilization Services	Exhibit 14
Shore Base Services	Exhibit 15
Marine Logistics Services	Exhibit 16
Project Coordinator and Rig-Site Co-ordinators	Exhibit 17

7.1 DELIVERY (for all items included in this tender)

For Bidder / Contractor	At Shore Base, Kakinada on DDP Destination basis.
Delivery Schedule	Successful bidder to clearly specify the delivery schedule from the date of firm award of contract

Exhibit 1

1. CEMENTING SERVICES

1.0 GENERAL

The Scope of Work for both rig mobilisations will include but not be limited to:

a) Performing all cementing operations including cementing engineering and design, cementing programme, centralisation plan, primary and remedial cementing jobs, cement plugs for side tracking operations, abandonment or suspension of the well, for well control related issues and for any other related jobs as required.

b) The minimum Compressive strength details for various slurries is provided in the scope under **Table 3** below.

c) Performing pressure testing of lines, BOP, tubing and casing, formation integrity and other testing as required

d) Assisting in well circulation, well killing operations if necessary and as required.

e) Setting down hole tools including retrievable packers, cement retainers, bridge plugs and inflatable packers.

f) Performing other pumping services including but not limited to well testing, completion, acidizing, formation fracturing, formation strength tests.

g) Performing Leak Off Tests, with calculations and reports

h) Be responsible solely for the operation of the Contractor's equipment and items including but not limited to rigging up, testing, running, and rigging down of the Contractor's equipment and items.

i) Supply of cement and chemicals of good quality and supply of equipment and downhole tools as required by this scope of work.

j) Contractors under this contract shall provide deep-water cementing services in Exploratory Wells by providing their Engineers, Operators, technology, cementing equipment, cement additives and slurry design on Deep water floater Rigs operating water depth up to 3000m.

k) The Contractor shall be responsible to design, simulate and plan the cement job and design the cement slurry in Offshore deep water depth Wells as per the well requirement based on the data provided by OIL, with their own chemicals and to execute the job as

per their own plan approved by OIL with an objective to improve the quality of cementation jobs thereby to reduce costly secondary repair jobs [bond improvement] in order to reduce the overall well cost. Contractor should also have the latest cementing software to simulate the cement job including centralizer placement software.

l) The Contractor shall also be responsible for performing field specific analysis, carry out post job analysis of all cementation jobs in their simulator and to suggest ways and means to improve further on quality of jobs to avoid costly secondary repair job and to develop confidence to avoid CBL / VDL repair jobs whenever necessary.

m) The Contractor shall consider the availability of the all-requisite Cementing equipment (Including Floating equipment, centralizers, subsea plugs etc.), and additives for the cementation jobs at the planning stage. The Contractor shall co-ordinate and recommend availability of additives for all jobs prior to commencement.

n) The Contractor shall collect the cement sample received from the rigs from OIL Air Logistics Support Base(s) / Bulk Handling Plants and will get it tested in their own labs to confirm the designed slurry parameters.

o) The Contractor shall furnish detailed specific cementing programs, spacer design and cement hydraulics recommendations, and job reports, in respect of cement jobs executed by them in the past for end of Well cementing reports, summaries and system recommendation as a part of documentation, and any additional reports as may be requested by OIL within 15 days of completion of Well. Contractor shall be responsible for providing complete well report comprising of slurry design, computer aided program, job execution parameter, complications if any, complete post job analysis & material consumption report so that accordingly necessary corrective measures / improvements / precautions for future operations may be taken up so as to avoid costly secondary repair jobs. Contractors should also familiarize OIL personnel with complete understanding of software programs to have meaningful interpretation of data.

p) Contractor should have professionalism for total planning, designing & execution of cementing operations, co-ordination with third party services provider and ensure successful completion & result of the cementing job.

q) **Job simulation:** The Contractor shall submit recommendations for mechanical aids and chemical aids such as centralizer's placement, pre-flush design, cement slurry design [including requirement of additives], casing running in speed, regime of flow, job schedule based on u-tube simulator results, gas migration risk analysis, estimation of

BHCT and displacement rate for effective mud removal without fracturing, etc. based on computer aided design and computer simulation results for all the casing cementation jobs on which they are providing services.

2.0 EXPERIENCE

The Contractor should have minimum of five (05) years of experience in providing Cementing services to Drilling/E&P Companies with at least three (03) years in offshore areas.

The Contractor should also have the experience of cementing at least 2 deep water Wells (WD> 500 meters) and should have executed at least one contract for Cementing services in offshore areas in the last 07 years reckoned from original bid closing date.

2.1 Contractor to Provide

2.1.1 Contractor shall be able to provide all equipment, labour and materials, and services specified herein or in the Compensation Schedule.

2.1.2 Contractor shall provide cement and the additives (in sacks) on 1 MT capacity pallets. The pallets shall be reusable at least once but with the approval of the Base Manager at the Shore Base only.

2.1.3 The Company reserves the right to mobilize all, or part of the equipment, personnel or services mentioned herein, and, in the Equipment, List included in this exhibit.

2.2 Bulking Facility

a) Supervision of the bulking facility at shore base as required.

2.3 Approvals

The contractor shall submit the following to Company for approval prior to the Commencement Date:

i) Preventive maintenance schedule and plan for all Contractor's Equipment.
ii) Bulk handling guidelines.
iii) Emergency procedures for gas, fire, and other emergencies.

iv) Contractor's safety manual and procedures.

2.4 Personnel

All the Contractor's offshore personnel should possess a valid Offshore Survival Certificate and other Statutory Certificates.

The contractor shall submit CVs of the personnel to the company within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for-Company's approval. The Contractor shall not deploy its personnel unless cleared by the Company.

The Expatriate personnel of the Contractor shall possess all clearances, and the Contractor shall ensure that such clearances are obtained at his own responsibility and cost prior to any expatriate personnel mobilized to the field.

Contractor shall be responsible for deploying following cementing personnel as per OIL requirement during **ONE (1)** Rig Operations.

Sl.	Designation	Qty.
1	Cementing Engineer – Drilling Unit Based (exclusively for OIL, Duty at Rig)	1 (One)
2	Cementing Helper – Drilling Unit Based (exclusively for OIL, Duty at rig)	1 (One)
3	Cementing Helper – Call Out basis	1 (One)
4	LAS Unit Operator – Drilling Unit Based (exclusively for OIL, Duty at Rig)	1 (One)
5	Logistics Supervisors – Shore Based – At no additional cost	2 (Two)
6	Cementing Engineer cum Co-Ordinator – Shore Based (exclusively for OIL) – At no additional cost	1 (One)

Contractor shall be responsible for deploying following no. of additional cementing personnel as per OIL requirement during **TWO (2)** Rig Operations.

Sl.	Designation	Qty.
1	Cementing Engineer – Drilling Unit Based (exclusively for OIL, Duty at Rig)	1 (One)
2	Cementing Helper – Drilling Unit Based (exclusively for OIL, Duty at rig)	1 (One)
3	LAS Unit Operator – Drilling Unit Based (exclusively for OIL, Duty at Rig)	1 (One)

2.5 Qualification & Experience of Cementing Base Engineer and Cementing Engineer Drilling Unit Based

1. Cementing Base Engineer and Cementing Engineer Drilling Unit Based should possess bachelor's degree in engineering preferably in Mechanical, Electrical or Petroleum.
2. Cementing Base Engineer and Cementing Engineer Drilling Unit Based shall be qualified and fully trained in cementing engineering to perform all cementing and testing, analysis and interpretation test results and take corrective measures in maintaining required features of cement slurry.
3. The Base Cementing Engineer should have Seven (7) years' experience in planning & supervising of cementing jobs in offshore rigs with minimum Two (2) years on floater Rigs. The Base Cementing Engineer should have done planning & supervised of primary cementation of at least 3 DW Wells in water depth of not less than 500 meters, out of which at least one well should have been in water depth of 1500 meters or more.
4. The Cementing Engineer Drilling Unit Based should have experience of Five (5) years in planning & supervising cementing jobs on in offshore rigs on with minimum Two (2) years on floater Rigs. The Cementing Engineer Drilling Unit Based should have done planning & supervised of primary cementation of at least 3 DW Wells in water depth of not less than 500 meters, out of which at least one well should have been in water depth of 1500 meters or more.

2.6 Responsibility of Cementing Base Engineer

1. Contractor shall depute its Cementing Base Engineer to plan and design all cementing jobs in consultation with OIL, if required supervise all critical cementing jobs at the rigs where contractor is providing services. Contractor shall submit the CVs of the above personnel in advance who shall be associated with the contract for OIL approval at the time of award of contract.
2. Cementing Base engineer shall be responsible for planning, designing, simulating the cementing jobs and coordinating with Cementing Operator and Cementing Field supervisor for successfully carrying out all cementation jobs, technical support for all aspects of cementing, pressure testing and associated cementing units, equipment/ tools and shall carry out all connected activities in accordance with the highest offshore standards. He will ensure overall supervision directly by him or through a field supervisor at site on all critical jobs. He will also submit the comprehensive job completion report within 15 days of completion of the Well as explained above in the scope of work including post job analysis and corrective measures if any for improvement of job.
3. Cementing Base Engineer has to attend morning/ evening meeting in the OIL office and has to coordinate with OIL MDT on day-to-day basis for smooth field operations and to interact with before and after the cementation jobs with Cementing Field Supervisor, Cementing Operator/ Assistant Cementing Operator at Rig and report to OIL Engineer.

2.7 Responsibility of Cementing Engineer Drilling Unit Based

1. Contractor shall depute Cementing Engineer Drilling Unit Based for all the cement jobs on rig to supervise and execute the cementation plan provided/ approved by Base Engineer/ OIL. Contractor shall submit the CVs of the above personnel in advance who shall be associated with the contract for OIL approval at the time of award of contract.
2. The Cementing Engineer Drilling Unit Based shall be responsible to supervise directly at site on all cementation jobs as and when required by OIL to coordinate with OIL Engineer for successfully carrying out all cementation jobs, technical support for all aspects of cementing, pressure testing and other associated job with cementing unit, equipment/tools and shall carry out all connected activities in accordance with highest offshore standard.
3. The Cementing Engineer Drilling Unit Based, if in base, has to attend morning/ evening meeting in the OIL office and has to coordinate with OIL MDT [Multi-Disciplinary Team] on day

to day basis for smooth field operations and to interact with before and after the cementation jobs with OIL MDT members, Contractor's Base Engineer, Cementing Operator/ Assistant Cementing Operator at Rig and report to OIL Engineer.

2.8 Qualifications & experience of the Cementing Helper/Operator:

1. The cementing Helper/Operator should have passed at least SSC or equivalent and trade certificate from reputed vocational institute and should also have undergone basic training in Cementing from reputed cementing school, such as Halliburton/ Dowell Schlumberger / Baker Hughes or any other reputed cementing school.

2. The Cementing Helper/Operator deployed for the cementing services against this contract should have a field experience (onshore/offshore) of more than five (5) years for Cementing Helper/Operator of performing cementing operation independently.

3. For Cementing Helper/Operator, at least 3 years should be in offshore areas on floater rigs. Cementing Helper/Operator deployed at floaters should have carried out primary cementation of at least 3 wells in water depth of not less than 500 meters, out of which at least one well should have been in water depth of 1500 meters or more.

4. The Cementing Helper/Operator should have worked as Cementing Helper/operator and have handled jobs as per scope of work for at least 3 years.

5. The Cementing Helper/Operator should be conversant with all aspects of cementing and allied pumping jobs. The Cementing Helper/Operator should have good knowledge about the use of cement additives both in powder/liquid condition and their functions, also their factors influencing slurry design.

6. The Cementing Helper/Operator should be conversant and experienced in operation and maintenance of reputed make/ types of cementing units (ADC/ PSM/ RAM). He should also have knowledge and experience of operating subsea cementing heads, mandrill assembly and equipment, generally used for cementing and allied pumping services for activation of well in oil industry. The cementing Helper/Operator should also be conversant with the operation and maintenance of Batch Mixers and Top drive Compatible Subsea Cement Heads.

7. The Cementing Helper/Operator deployed by the Contractor shall be responsible for operation of Cementing Unit (ADC/PSM/RAM) and Batch Mixer installed at the rig. The Cementing Helper/Operator shall be responsible for checking the order of cementing plug loading/ releasing, final circulation prior to cementing, mixing of exact dose of chemicals powder/ liquid (preferred), in the mixing water at Rig in the presence of OIL's representative,

control of slurry density during pumping and monitoring the displacement followed by bumping.

8. The Contractor shall maintain the Log of operations to include cementing operation in progress, time break up, density measurement, mixing rate, volume of fluid pumped, pumping pressure during cement pumping & displacement, displacement rate, quantity of cement, additives & mechanical aids used. All specific events occurring throughout the cementation job should be recorded along with other relevant points for post job analysis.

9. The Cementing Helper/Operator shall work on 28 days "ON and OFF" schedule. The Cementing Helper/Operator deployed should be agile and of sound health to carry out vigorous operational and maintenance job of cementing unit.

10. The Cementing Helper/Operator deployed should not be more than 60 years of age.

11. Cementing Helper/Operator should be fluent in English language conversation

2.9 Responsibility of Cementing Helper/Operator

The cementing Helper/Operator has to carry out all the cementing and allied jobs with cementing unit during drilling of oil and gas wells. He has to carry out following jobs but not limited to as listed below

a. 36" conductor cementation (if required)
b. 20" casing cementation
c. 16" liner cementation
d. 13-3/8" casing cementation
e. 9 5/8" casing cementation
f. 7" liner cementation
g. 4-1/2" liner cementation
h. BOP stack testing up to 15,000 psi or as required
i. Other Allied jobs (Cementing unit support for other pumping jobs if required)
j. Plug jobs / Squeeze jobs
k. Diesel pumping, packer (pressure testing) and other pressure pumping jobs
l. Leak off test
m. RTTS/Storm valve setting/unsetting of all required casing sizes
n. Setting/unsetting of all required sizes retrievable bridge plugs.
o. Misc. Pressure testing up to 15,000 psi

p. Operation & Maintenance of equipment

q. Cementing operators also must carry out all other jobs with cementing units not listed above but connected with drilling, production testing and work-over of oil and gas wells offshore related to cementing units. Cementing Unit operations support may be required for execution of acid job which is included in Allied Jobs.

3.0 Qualification, Experience and Responsibilities of LAS Unit Operator

Contractor shall provide one (1) qualified, skilled and experienced LAS Unit Operator with experience of working in deep water, in water depths of at least 500m, to work on the Drilling Unit on rotation basis. The LAS Unit Operator shall have a minimum of 5 years' experience, out of which of 2 years should be in floater rig. The LAS Unit Operator shall be responsible including but not limited to the following:

a) Rigging up, operate and maintenance of the LAS unit.

b) Ensure trouble free Operations of the LAS System, by conducting pre job function checks

c) Closely work with Cementing engineer and design & monitor correct dosage of the cementing additives to ensure no / minimal dead volume losses.

d) Verify additive volumes & program metering rates

e) Maintain slurry consistency with close coordination with the cementer

f) Execute manual override as required

g) Operate data acquisition system, log deviations.

h) Post job - clean & flush additives lines and inspect equipment.

i) Maintain stock details by reconciling after each job.

4.0 SHORE BASE PERSONNEL (AT CONTRACTOR'S COST)

Two (02) logistics supervisors (at a time, day & night) to be deployed at the Shore Base Kakinada for supervision of the bulking activities and logistics of moving the tools, cement and additives to the Drilling Unit. The supervisor deployed at the Shore Base will co-ordinate with the Company's Base Manager at the Shore Base. The Supervisor shall be responsible including but not limited to the following:

a) Logistics management of equipment and personnel related to the Services, between the Company Shore Base and the Drilling Unit.
b) Administration of the Contractor's day-to-day affairs under the Contract.
c) Responsible for preparing, checking, and submitting the manifests to the Base Manager.
d) Responsible for always maintaining the stock and inventory and submitting a weekly status report to the Base Manager.
e) Responsible for preparing consumption reports based on reports from the Field Cementing Engineer and submitting a report to the Base Manager within 24 hrs after the job is carried out.
f) Responsible for receiving, maintaining, and releasing any of the Contractor's material and responsible to obtain a counter signature and approval from the Base Manager for any such movement of the material.
g) Shall always be available for consultation for the duration of the Contract.

5.0 CONTRACTOR TO PROVIDE

The contractor shall provide in the technical element of its submission, the information and data requested below.

5.1 Other Commitments

The contractor shall state all similar existing commitments and warrant the availability of the equipment being proposed.

Contractor shall provide details of the existing commitments of its and its major subcontractors' key personnel proposed for the Services.

5.2 Previous Experience

Details relevant to elements of the Services, of Contractor's (including, separately, all joint venturers) and any major subcontractor's experience using the same equipment intended to be used or installed in the Services.

5.3 Organisation

The organisation shall describe the responsibilities of each post holder particularly with reference to management, planning, technical, marine, safety and QA/QC.

Details of Contractor's organisation and management of the Services including:

a. A chart (or charts) showing the relationship to corporate management but particularly detailing the management structure of the organisation proposed including all its elements, sub-contractors and functional groups. The chart(s) shall show titles and names of Cementing Engineer and personnel of higher status. The chart(s) shall show lines of communication and lines of authority and shall clearly define the QA/QC and safety functions. The organisation shall relate to the mobilisation plan.

b. Career résumés of Contractor's proposed Cementing Engineer and Cementing personnel for the Services, which shall provide as a minimum, full details of qualifications, years of relevant experience, previous employment and responsibilities. Contractor shall state current location and commitment of proposed personnel. The cementing engineers shall have adequate experience in similar cementing operations.

5.4 Provisions by the Contractor

a. Contractor shall submit a cementing programme based on Company’s proposed well design for the wells and abandonment plugs as given along with the Bid. All the testing of the cement slurries shall be based on API standards as a minimum. The provisional well data and design parameters for cement design are included in the introduction to this scope-of-work document.

b. The cost details shall not be included in the Technical Proposal. The Technical Proposal shall contain only the quantities of cement and additives required. The cost details shall be included only in the Price Bid.

c. The Contractor shall propose equipment and tools necessary to carry out the scope of work including but not limited to the following effectively and most efficiently. A minimum requirement is proposed in Table 1 of this exhibit.

d. Contractor shall provide a list of all equipment necessary to carry out a cement job on rental basis. A minimum requirement is indicated in Table 1 of this exhibit. Contractor shall provide detailed technical specifications including but not limited to the year of manufacture, date of last inspection carried out and dimensional sketch of the equipment which will be installed on the Drilling Unit.

e. Contractor shall provide a list of all the other additional tools and equipment on rental as necessary. A minimum requirement is listed in Table 2 of this exhibit. Contractor shall provide detailed technical specifications including but not limited to the year of manufacture, date of last inspection or maintenance carried out.

f. In respect of the provision of cement and additives necessary to carry out the cement job and Contractor is required to price such provision on consignment basis. A minimum list of additives is indicated in Table 5 of this exhibit. Contractor is encouraged to propose additional additives if required to carry out the cement job more efficiently. Contractor shall submit detailed technical specifications of each additive including the MSDS sheets and standards with which they comply. Tendered should ensure that all the chemicals and additives supplied have adequate shelf life till the completion of the contract. The minimum applicable standard is API.

g. Contractor shall provide copies of the relevant certificates from a recognised Certifying Authority establishing the proper certification of the spread and all principal equipment related thereto for the purpose required. Contractor shall state the availability of the spread for inspection by Company.

5.5 Reporting

Contractor shall submit sample report formats for all reports as mentioned in Clause 10.0 below.

6.0 Mobilisation and Logistics

Contractor shall submit detailed mobilisation plan.

7.0 Technical Support

a. Contractor shall state from where it will obtain laboratory services for the analysis.

b. Contractor shall provide details of its supply base facilities at Kakinada.

c. Contractor shall provide the experience and qualifications of the person nominated.

8.0 Pricing

The Contractor must mobilize all the equipment, personnel or services mentioned herein as per the mobilization notice.

a. Mobilization/Demobilization charges are to include cost of appropriate packaging, anti-corrosion measures, etc, to ensure arrival of the equipment in good condition as follows:

i. Where appropriate all equipment and materials must be delivered on/in suitable skids, tool racks, baskets, containers, pallets, etc for delivery offshore or for temporary storage.
ii. Dangerous goods and explosives must be suitably packaged, labelled and otherwise marked according to all regulations.
iii. Appropriate packaging must be utilised for all sea and airfreight deliveries – where appropriate, specify your proposed packaging method.
iv. If appropriate, material must be suitably coated with a corrosion prevention material and be packed with a dehumidifier, both of which must be suitable for storage at ambient temperatures of 45°C.
v. If appropriate, material must be securely contained within rigid wooden containers.
vi. Contractor shall supply appropriate lifting gear for all equipment to be delivered offshore; current load tests certificates for all slings, rigging and lifting gear utilised will be required.

b. Contractor is to maintain sufficient inventory of chemicals, cement and consumables at its warehouse located at a conveniently close distance from shore base.

c. The Service Day Rate of the tools to commence on arrival at Logistics shore base at Kakinada after customs, inspections and other clearances and Service Day Rate to cease when the demobilization notice is issued by the Company.

d. All Mobilization and Demobilization cost to be inclusive of all freight, taxes, insurance and any other cost to and from Shore Base.

e. Contractor will invoice, and Company will pay on actual per barrel basis, payment will be made as per the quoted per barrel price which is inclusive of cement and all other required chemical and additives cost as per the concentration required to be prepare for each cementing job. Any excessive consumption of chemical and additives Company will pay only 10% excess concentration of the concentration as quoted, irrespective of any consumption beyond 10%.

f. Pricing for chemicals and consumables shall be inclusive of cost, freighting, insurance, customs clearance, any other local taxes and surcharges and to be delivered at Company Shore Base. Company to provide the necessary documentations for all necessary clearances. Contractor is requested to provide a consignment plan for such items. Payment will be made on actual consumption, and all unused chemicals and consumables will be taken back by the Contractor. Once a standard package is opened, it will be considered as consumed.

g. The Contractor shall provide a complete list of all items that can be provided by the Contractor for this Contract. The cost of each of the item shall be provided in the format as indicated in the Price Schedule. Mark the global list of items clearly as "Global Price List" with applicable discount. All excessive cement, chemical and additive consumption up to 10% per barrel will be paid based on the quoted unit price after Company's prior approval, which needs to be done at the time of finalizing the cement recipe.

9.0 Subcontractors

If Contractor wishes to subcontract or associate in any way with another company or other companies for the performance of the Contract, then Contractor is required to state those parts of the Services which it intends to subcontract and name the party which is proposed to carry out that part of the Services. A full description of the SoW to be subcontracted, together with details of the proposed subcontractor's resources, capabilities and its previous experience in relation to the subcontracted scope is to be provided. Contractor must list all such subcontracts which are minor and of little significance to drilling work or programme as a pre-tender tie-up with a subcontractor in the Contractors final submitted bits.

In the absence of such information, or in respect of the any of the Services not specified as being subcontracted, Company will assume that Contractor will carry out the entire or remaining Services itself and no subcontracting or association will be permitted, except with the express approval of the Company.

10.0 REPORTING

A. General

Contractor shall comply with the following reporting requirements as a minimum. Contractor shall also provide additional reports to the Company Representative as may reasonably be requested during the Work.

a. Tools & Equipment Inventory

Contractor shall maintain an up-to-date inventory of all tools and equipment held on the Drilling Unit, Shore Base, work boats or elsewhere. This report shall be submitted on a weekly basis to the Company Representative.

b. Cementing Supplies Inventory

Contractor shall maintain an up-to-date inventory of all cement, cement blend and additives held on the Drilling Unit, Shore Base, Work Boats or elsewhere. This report shall be submitted on a weekly basis to the Company Representative.

c. Cement Evaluation Report

Contractor shall provide a detailed evaluation of each cement job, which shall include but not be limited to the following:

i. Cement design and cement programme.
ii. Assumptions used in the cement design and programme.
iii. Details of the operations including time break up and cost break up.
iv. Comparison between the plan and the actual parameters.
v. List of consumables used for the cement job.
vi. Comparison of planned Vs actual cost.
vii. Analysis of the cement job including detailed evaluation of any downtime.
viii. The detailed report of the unit which includes but not limited to pressures, rates and densities etc. and other equipment in both hard and soft copies.

This report shall be submitted within 24 hrs after the job is carried out.

d. End Of Well Report

The contractor shall provide the following end-of-well reports within 14 days of the end of operations on each well:

i. A detailed recap of the cementing operation at the end of each well.
ii. An evaluation of all the other operations including the setting of down hole tools, performing other pumping services related to well testing, completion, acidizing, formation fracturing and, formation strength tests.
iii. An evaluation of any squeeze or remedial cement jobs and the abandonment plug jobs carried out in the well.
iv. A detailed cost breakdown and material reconciliation for all the services performed.
v. Details of downtime and reason for the same

e. Sample Reports

The Contractor shall submit the sample reports to the Company prior to the commencement of the operation. The format of the reports shall be mutually agreed between the Company and the Contractor prior to the commencement of operations.

11.0 EQUIPMENT, MATERIALS AND ADDITIVES

a. Minimum Requirements

The contractor shall provide all equipment, cement and additives necessary to carry out a cement job. The indicative lists are attached as Tables 1 & 2 of this exhibit. All cementing equipment should be capable of performing the job satisfactorily with the tubular which shall be advised after the finalization of the Rig Contract.

Contractor must provide API class-G oilwell cement (Dalmia Make) or equivalent required for slurry design.

Make of Cement Additives must be from the following: Schlumberger, Halliburton and Baker Hughes.

b. Maintenance

Upon request by Company, Contractor shall provide proof of maintenance and service history of all items of equipment supplied.

The contractor shall maintain the equipment in such a manner to prevent downtime or waiting on equipment during operation.

c. Equipment to be Operational

The contractor shall maintain all equipment in operating condition and shall supply all relevant certifications requested by Company. Batch Mixer and Cementing Equipment shall not be more than 10 years old as on the Original Bid closing date.

d. Inspection

Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company as per Clause No: 8.0 of SCC and at any time during the duration of the contract.

12.0 LOGISTICS

a. Shore Base

The contractor is required to mobilize all its equipment, chemicals etc to the Contractor's Shore Base at Kakinada, Andhra Pradesh, India. All the equipment, materials, consumables etc. supplied by the Contractor to the Company under the contract, shall be stored in Contractor's facilities at Kakinada and shall be delivered at Shore Base at Kakinada as per operational requirement and when instructed by the Company.

All lifting and load-bearing equipment of the Contractor shall be certified prior to shipment to the Drilling Unit, and all relevant certifications shall be available for inspection. Cement shall be supplied on 1 MT double-lining installed marine bags.

13.0 TECHNICAL SUPPORT

a. Samples

The contractor shall obtain samples of cement, additives and water before any cement job for testing in Contractor's accredited laboratory. Contractor shall inform the Company of where the cement, additives and water are tested, giving details of the location, method of transport of samples to the laboratory and try, minimum time required for the whole process starting from obtaining samples to issuing the test result to the Drilling Unit. The final cement programme shall be based on such these results and shall be submitted to the Company and the Drilling Unit 48 hours before the cement job. These tests may be witnessed by Company's representative.

b. Testing Facility (Laboratory)

Contractor shall have testing facility [lab] in India as per API- 10A/ API- 10 B specifications for testing of oil well cement with chemicals and additives provided by OIL to formulate any treatment, design that may be required in OIL's field. In case of any urgent/critical requirement, the Contractor agrees to keep the cement test lab operative round the clock for carry of cement slurry design. Manpower in cement lab should have at least two years of experience on designing & testing protocol of Cement slurry in cement lab, conversant with testing relevant testing equipment & cement additives function. Contractor shall also carry out tests which need not be necessarily covered in API-10A and API-10B specifications for testing but is found to be necessary by OIL. Contractor should have enough below-mentioned test equipment to meet the slurry design requirement.

The lab should have minimum of following testing equipment:

a) High Temp high Pressure Cement Slurry Consistometer
b) Curing Chamber
c) Atmospheric Consistometer
d) Fan Viscometer
e) HTHP Fluid Loss Cell
f) Warring blender
g) Destructive Compressive Strength Tester

h) Computerized UCA

i) Gas Migration Testing Cell/ SGS Type (This test facility should be available at Contractors test lab or at their technology centre to provide test results in 10 days of request by OIL). For evaluation/ designing of gas tight slurries under bottom hole conditions (suitable for gas migration control evaluation at BHCT of 0°C to 200°C).

j) Slurry Stability and Settling Tester.

k) Chiller Unit for testing deep water cement slurry at very low temperature.

l) Stirred Fluid Loss Apparatus (for measurement of fluid loss under dynamic conditions/ measurement of free fluid under simulated bottom hole conditions, if desired at an inclination).

m) For rheological measurements at simulated bottom hole conditions, it is preferable to have pressurized viscometer as per API RP 10B-2.

c. Logistical Support

Contractor shall provide all necessary logistic support for their services.

d. Technical

Contractor shall nominate a contact person to assist on technical queries and issues, in support of the Cementing Engineer based in India. Contractor shall state the location of the nominee and provide details of experience and qualifications.

e. New Developments

Contractor shall make available to Company in as much as it is not constrained by agreements of confidentiality, details of any ongoing research and development activities that it is undertaking, and which may be relevant to the Company's operation.

Table 1: Rental Equipment List (During 1 Rig Operation)

Sr. No.	Equipment	Company's minimum specification	Qty
1	Cementing Unit twin pump unit	Will be provided as part of the rig equipment.	
2	Bulk facilities	To be provided as part of Shore Base Service.	

3	Batch Cement Mixer	Will be provided as part of the rig equipment	
4	Chiksan Pipes Required (Sour Service) (All connections should be Fig. 1502 connections) All the components shall be rated to 15,000 psi Working Pressure	1. 6 m. Loop and 1 m Straight 2. Lo-Torc valves 3. 90-degree Elbows & 45-degree Elbows 4. Swivels 5. X-O from 2" fig.1502 x 3" fig.1502 6. X-O from 2" fig.1502 male x 2" fig. 1502 female Adapter for 2" fig. 1502 male	Sufficient quantity to be provided for all the jobs as mentioned in the Scope of work
5	Cementing Tools	Chiksan accessories (other than those mentioned above) – 15,000 psi WP rating (sour service) 2" High pressure hoses – 15,000 psi WP rating All connections should be Fig. 1502.	Sufficient quantity to be provided for all the job as mentioned in the Scope of work
6	Subsea cementing head (to house ball, dart etc) & sub-sea running mandrel / mandrels to hold sub-sea cementing plugs as per size of casing for carrying out primary casing cementation	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1
7	Subsea cementing head (to house ball, dart etc) & sub-sea running mandrel / mandrels to hold sub-sea cementing plugs as per size of	For 9-5/8" 47 lb/ft P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, premium connections	1

	casing for carrying out primary casing cementation		
8	Circulating Head c/w 2" WECO 1502 connection-	For 20", 133 lb/ft, X-56, Multi start connector	1
9	Circulating Head c/w 2" WECO 1502 connection-	For 16", 84 lb/ft. P-110, BTC connections	1
10	Circulating Head c/w 2" WECO 1502 connection	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1
11	Circulating Head c/w 2" WECO 1502 connection	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections	1
12	Circulating Head c/w 2" WECO 1502 connection	For 7" casing, 32 lb/ft, V-150, Premium connections	1
13	Circulating Head c/w 2" WECO 1502 connection	For 4-1/2" casing, 15.1 lb/ft, P-110, Premium connections	1
14	Circulating Head c/w box connection suitable for drill pipe	For 20", 133 lb/ft, X-56, Multi start connector	1
15	Circulating Head c/w box connection suitable for drill pipe	For 16", 84 lb/ft. P-110, BTC Connections	1
16	Circulating Head c/w box connection suitable for drill pipe.	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1
17	Circulating Head c/w box connection suitable for drill pipe.	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections	1
18	Circulating Head c/w box connection suitable for drill pipe.	For 7" casing, 32 lb/ft, V-150, Premium connections	1
19	Circulating Head c/w box connection suitable for drill pipe.	For 4-1/2" casing, 15.1 lb/ft, P-110, Premium connections	1

<table>
<tr>
<td>20</td>
<td>Liquid Additive System - Skid-mounted, compact footprint, suitable for offshore installation

• Metering pumps (VFD)
• Electromagnetic flowmeters connected to automated control valves
• Metering control module to calculate and adjust dosing rates proportional to cement mixing rate
• Local control panel with remote operation capability
• Manual override — Backup manual control in case of automation failure
• Proportioning tank - Combined with the metering module for full process control of slurry density</td>
<td>To deliver with automated metering system to continuously deliver precise volumes of liquid chemical additives into the cement slurry during cementing jobs

<table>
<tr><th>Parameter</th><th>Specification</th></tr>
<tr><td>Number of additives</td><td>Up to 4 simultaneously or in sequence</td></tr>
<tr><td>Metering accuracy</td><td>±0.1 lbm/gal slurry density control</td></tr>
<tr><td>Motor type</td><td>Explosion-proof, VFD-controlled (e.g., 55 kW, 460V/60 Hz)</td></tr>
<tr><td>Tank capacity</td><td>Typically, 4 × 350 gal per skid</td></tr>
<tr><td>Hazardous area compliance</td><td>Zone 2 (ATEX/IECEx)</td></tr>
<tr><td>Integration</td><td>Compatible with ACC (Advanced Cement Control) data acquisition system</td></tr>
<tr><td>Control interface</td><td>HMI computer (local + remote)</td></tr>
</table>
</td>
<td>1 Unit</td>
</tr>
</table>

Table 2: Other Rental Equipment List

Sr. No.	Equipment	Company's minimum specification	Qty
1.	Retrievable squeeze packer c/w circulating valves and crossovers	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1 no + 1 back up
2.	Retrievable squeeze packer c/w circulating valves and crossovers	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections	1 no + 1 back up
3.	Retrievable squeeze packer c/w circulating valves and crossovers	For 7" casing, 32 lb/ft, V-150, Premium connections	1 no + 1 back up
4.	Retrievable squeeze packer c/w circulating valves and crossovers	For 4-1/2" casing, 15.1 lb/ft, P-110, Premium connections	1 no + 1 back up
5.	Retrievable storm packer, c/w circulating valve, storm valve and crossovers.	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections, capable of hanging +/-300 Klbs	1 no + 1 back up
6.	Retrievable storm packer, c/w circulating valve, storm valve and crossovers.	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections, capable of hanging +/-300 Klbs	1 no + 1 back up
7.	Retrievable storm packer, c/w circulating valve, storm valve and crossovers	For 7" casing, 32 lb/ft, V-150, Premium connections, capable of hanging +/-300 Klbs	1 no + 1 back up
8.	Pressurized mud balance c/w spares		2 No's
9.	Pilot test unit and necessary equipment		1 set

10.	Sampling kit for transporting samples		As required

Table 1a: Additional Rental Equipment List (During 2 Rig Operation)

Sr. No.	Equipment	Company's minimum specification	Qty
1	Chiksan Pipes Required (Sour Service) (All connections should be Fig. 1502 connections) All the components shall be rated to 15,000 psi Working Pressure	1. 6 m. Loop and 1 m Straight 2. Lo-Torc valves 3. 90-degree Elbows & 45-degree Elbows 4. Swivels 5. X-O from 2" fig.1502 x 3" fig.1502 6. X-O from 2" fig.1502 male x 2" fig. 1502 female Adapter for 2" fig. 1502 male	Sufficient quantity to be provided for all the jobs as mentioned in the Scope of work
2	Cementing Tools	Chiksan accessories (other than those mentioned above) – 15,000 psi WP rating (sour service) 2" High pressure hoses – 15,000 psi WP rating All connections should be Fig. 1502.	Sufficient quantity to be provided for all the job as mentioned in the Scope of work
3	Subsea cementing head (to house ball, dart etc) & sub-sea running mandrel / mandrels to hold sub-sea cementing plugs as per size of casing for carrying out primary casing cementation	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections, capable of hanging +/- 300 Klbs	1

4	Subsea cementing head (to house ball, dart etc) & sub-sea running mandrel / mandrels to hold sub-sea cementing plugs as per size of casing for carrying out primary casing cementation	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections, capable of hanging +/- 300 Klbs	1
5	Circulating Head c/w 2" WECO 1502 connection-	For 20", 133 lb/ft, X-56, Multi start connector	1
6	Circulating Head c/w 2" WECO 1502 connection-	For 16", 84 lb/ft. P-110, BTC connections	1
7	Circulating Head c/w 2" WECO 1502 connection	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1
8	Circulating Head c/w 2" WECO 1502 connection	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections	1
9	Circulating Head c/w 2" WECO 1502 connection	For 7" casing, 32 lb/ft, V-150, Premium connections	1
10	Circulating Head c/w 2" WECO 1502 connection	For 4-1/2" casing, 15.1 lb/ft, P-110, Premium connections	1
11	Circulating Head c/w box connection suitable for drill pipe	For 20", 133 lb/ft, X-56, Multi start connector	1
12	Circulating Head c/w box connection suitable for drill pipe	For 16", 84 lb/ft. P-110, BTC connections	1
13	Circulating Head c/w box connection suitable for drill pipe.	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1
14	Circulating Head c/w box connection suitable for drill pipe.	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections	1
15	Circulating Head c/w box connection suitable for drill pipe.	For 7" casing, 32 lb/ft, V-150, Premium connections	1

<table>
<tr><td>16</td><td>Circulating Head c/w box connection suitable for drill pipe.</td><td>For 4-1/2” casing, 15.1 lb/ft, P-110, Premium connections</td><td>1</td></tr>
<tr><td>17</td><td>Liquid Additive System - Skid-mounted, compact footprint, suitable for offshore installation

• Metering pumps (VFD)
• Electromagnetic flowmeters connected to automated control valves
• Metering control module to calculate and adjust dosing rates proportional to cement mixing rate
• Local control panel with remote operation capability
• Manual override — Backup manual control in case of automation failure
• Proportioning tank - Combined with the metering module for full process control of slurry density</td><td>To deliver with automated metering system to continuously deliver precise volumes of liquid chemical additives into the cement slurry during cementing jobs

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</table>

Table 2a: Other Rental Equipment List (additional for meeting 2nd Rig requirement)

Sr. No.	Equipment	Company's minimum specification	Qty
1	Retrievable squeeze packer c/w circulating valves and crossovers	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections	1
2	Retrievable squeeze packer c/w circulating valves and crossovers	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections	1
3	Retrievable squeeze packer c/w circulating valves and crossovers	For 7" casing, 32 lb/ft, V-150, Premium connections	1
4	Retrievable squeeze packer c/w circulating valves and crossovers	For 4-1/2" casing, 15.1 lb/ft, P-110, Premium connections	1
5	Retrievable storm packer, c/w circulating valve, storm valve and crossovers.	For 13-3/8", 72 lb/ft / 13 5/8" casing, 88.2 lb/ft, Q-125, BTC connections, capable of hanging +/- 300 klbs	1
6	Retrievable storm packer, c/w circulating valve, storm valve and crossovers.	For 9-5/8" 47 lb/ft, P-110 / 9 7/8" 62.8 lb/ft casing, LS-140, Premium connections, capable of hanging +/- 300 klbs	1
7	Retrievable storm packer, c/w circulating valve, storm valve and crossovers	For 7" casing, 32 lb/ft, V-150, Premium connections, capable of hanging +/-300 klbs	1
8	Pressurized mud balance c/w spares		1
9	Pilot test unit and necessary equipment		1 set

10	Sampling kit for transporting samples		As required

Table 3: Specifications Of Slurry & Spacer Packages (Test Conditions vs Desired Parameters):

Specifications of slurry packages (test conditions vs desired parameters):

PACKAGE NO			**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IXII**
PACKAGE DESCRIPTION			**GAS TIGHT SLURRY**	**GAS TIGHT SLURRY**	**GAS TIGHT SLURRY**	**GAS TIGHT SLURRY**	**GAS TIGHT SLURRY**	**SHALLOW DEPTH (SEABED)GAS TIGHT SLURRY**	**SHALLOW DEPTH GAS TIGHT SLURRY**	**LIGHT WEIGHT GAS TIGHT SLURRY**	**HIGH PERFORMANCE LIGHT WEIGHT GAS TIGHT SLURRY**
		Unit	**60-75°C**	**75-90°C**	**90-110°C**	**110-140°C**	**140-170°C**	**4 to 10°C**	**10 to 30°C**	**10 to 30°C**	**75 to 90°C**
TESTING CONDITIONS	Slurry Density	ppg	15.8	16.2	16.4	18	18.3	11	15.8	12	12.5
	BHST	deg C	105	126	154	196	200	10	20	10	126
	BHCT	deg C	75	90	110	140	170	4-10	20	20	90
	Pressure	PSI	7500	10000	10000	10000	12500	5000	5000	5000	7000
	Time to raise temp	Min	30	30	40	40	60	40	40	40	40
	Break in Pumping	Min/ after min	10min/ 60min	10min/ 60min	10min/ 60min	10min/ 60min	10min/ 60min	10min/ 45min	10min/45min	10min/ 45min	10min/ 45min
	Mixing water		Fresh	Fresh	Fresh	Fresh	Fresh	Fresh	Fresh	Fresh	Fresh
	Cement		Class-G	Class-G	Class-G	Class-G	Class-G	Class-G	Class-G	Class-G	Class-G

DDESIRED PARAMTERS	Thickening Time	Min	220 ±30	300 ±30	300 ±30	350 ±30	300+_ 30	350 ±30	250 ±30	330 ±30	250 ±30
	Fluid loss (Maximum)	ml/30 Min	<50	<50	<50	<50	<50	<50	<50	<50	<50
	Free Water (Max.)	%	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	24 Hrs Compressive strength	psi	2000	2000	2000	2000	2000 (48hrs)	>500 (24hrs)	2000 (48hrs)	1000 (48hrs)	2000
	Initial consistency (Max)	BC	20	20	20	20	20	20	20	20	20
	Gas migration Test		TT<20 Min	TT<20Min	TT<20Min	TT<20Min	TT<20Min	As per API	As per API	As per API	TT<20Min
	BP Settling Test (Stability) Max	Gm/ cc	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Physical state		Solid Dry Powder/ Liquid	Solid Dry Powder /Liquid	Solid Dry Powder/ Liquid	Solid Dry Powder/ Liquid	Solid Dry Powder/ Liquid	Solid Dry Powder/ Liquid	Solid Dry Powder/ Liquid	Solid Dry Powder/ Liquid	Solid Dry Powder/ Liquid
	Temperature Range (BHCT)		60 - 75°C	75-90°C	90-110°C	110-140°C	140-170°C	10 -30°C	10 -30°C	10 - 30°C	75 - 90°C

Notes:

1. The test schedule is to be considered for primary & Secondary casing cementation.
2. Total Packages in Scope of Work are as per Table 3 above and as per Table 4 below.

3. All the tests performed will be conducted at the mentioned BHCT (Bottom Hole Circulating Temperature) except the compressive strength test which shall be at BHST (Bottom Hole static Temperature). Free fluid and fluid loss to be determined at 90°C or BHCT, whichever is less.

4. All Cement additives shall be soluble/ miscible/ dispersible as per recommended dosage indicated in package in distilled water at 24±2 deg C.
5. Test results of all the packages is to be provided at BHCT at higher and lower temperatures of the given range. Evaluation shall be done on higher temperature of BHCT.
6. For slurry packages, Initial Consistency after 5 min conditioning at ambient temperature.
7. Dosages of any cement additives quoted by the bidder should be not below 0.01%.
8. To prevent strength retrogression, bidder to quote and use the Silica Flour.
9. Only Tri manganese Tetra oxide (Minimum density: 4.68 g/cc and minimum content of 68% of Mn by mass in Tri manganese Tetra oxide) is to be used as weighing agent by the bidder. The same shall be water soluble.
10. Provision of light weight slurry for 20" casing will be firm whereas for other size casings it will be optional and as required per need basis.
11. Bidder should give an undertaking that the quoted cement additives in the different packages are working in the entire temperature range of the package.
12. Bidder should submit "No Gas Migration Certificate" for all gas tight slurry packages.
13. Bidder should also submit the Static gel strength test report for all the gas tight packages. The test should achieve static gel strength from 100 to 500 lb/ 100 ft 2 within transition time of 20 minutes. OIL will not be carrying out the re-confirmatory testing for this parameter.
14. Bidder should submit the PDS and MSDS of the quoted cement additives.

Table 4: Specifications Of Spacer Packages:

Detailed Specifications of Spacer – WBM are tabulated below:

S.N.	Parameters	Requirement
1	Physical State	Solid Additives: The materials shall be in the form of fine powder, free from visible impurities.
		Liquid Additives: The materials shall be in the form of liquid, free from visible impurities.
2	Solubility/ Miscibility/ Dispersibility of the additives as per recommended dosage indicated in the: package in distilled water at 24 ±2 °C.	Shall be soluble/ miscible/ dispersible.
3	**Performance test**	
A	**a. Preparation of slurry:** Prepare Cement slurry with API Class 'G' Cement (HSR), recommended dosage of the vender's additives and laboratory tap water: (salinity 500 ppm) as per Slurry Package (16.2 PPG) of the tender.	
	b. Preparation of Mud: Prepare WBM of Sp. Gr. 1.50 ± 0.02 as mentioned below OR any preferred composition of WBM of same range at 90 °C . **Mud Composition:** Water - 100 + Biocide - 0.05+ Soda Ash - 0.1 + KCl - 5 + PAC L - 0.25 + PHPA- 0.3 + XC Polymer - 0.35 + Polyol - 5 Asphalt - 2.0 + Barytes (All additives are BWOW).	
	c. Preparation of Spacer: As per recommended dosage of the vender's	

	additives and laboratory tap water (salinity <500 ppm).	
B	**Test Conditions**	
	a. Pressure: Atmospheric psi b. BHCT: 90 °C c. Raising Time (RT): 30 minutes	
C	**Test Method:** Determine the Parameters as per API Recommended Practice 10B-2, 2nd Edn, April 2013 or as amended from time to time.	
D	**Results Required:**	
	a. Specific Gravity of spacer formulation	1.70 ± 0.02
	b. Initial Consistency of spacer formulation recorded after 5 minutes conditioning at ambient temperature and pressure, Bc	25 (Maximum)
	c. Stability of spacer formulation at 88 °C after conditioning in HPHT consistometer for 30 min. after RT.	It should be stable. No sedimentation/ settling No phase separation shall be observed.
	d. Viscometer/ Rheometer dial reading of 300, 200, 100 & 60 RPM of Mud & Spacer formulation at 88 °C after conditioning in HPHT consistometer for 30 min, after RT.	Dial reading should follow hierarchy Spacer > Mud All corresponding dial reading of Spacer should be ≥ 10% of mud.
	e. Viscometer / Rheometer dial reading of 300, 200 & 100 RPM of Spacer formulation & Cement Slurry at 88 °C after conditioning in HPHT consistometer for 30 min, after RT.	Dial reading should follow hierarchy Cement Slurry > Spacer All corresponding dial reading of

		cement slurry should be ≥ 10% of Spacer.
	f. Rheological compatibility and Stability of admixtures: Cement slurry: Spacer formulation and Mud: Spacer formulation at 88 °C after conditioning in HPHT Consistometer for 30 min. after RT. (Ratio of admixtures of Cement Slurry: Spacer formulation and Mud Spacer formulation to be taken – 95:5, 75:25, 50:50, 25:75 and 5:95)	It should be compatible and stable. No sedimentation/ setting. No phase separation shall be observed.
	g. R-Index Value (R) of Cement slurry: Spacer formulation and Mud: Spacer formulation admixtures at 88 °C after conditioning in HPHT Consistometer for 30 min. after RT. Where R [Highest 100 RPM reading from a: mixture Highest 100 RPM reading from an individual fluid of particular admixture] (Ratio of admixtures of Cement Slurry: Spacer formulation and Mud Spacer formulation to be taken 95: 5, 75:25, 50:50, 25: 75 and 5: 95)	20 (Maximum)
Bidder to undertake that the above WBM spacer can be designed up to 170°C (BHCT).		

Detailed specifications of Spacer – LTSOBM are tabulated below:

S.N.	Parameters	Requirement
1	Physical State	Solid Additives: The materials shall be in the

		form of fine powder, free from visible impurities. Liquid Additives: The materials shall be in the form of liquid, free from visible impurities.
2	Solubility/ Miscibility/ Dispersibility of the additives as per recommended dosage indicated in the: package in distilled water at 24 ±2 °C.	Shall be soluble / miscible / dispersible.
3	Performance test	
A	a. Preparation of slurry: Prepare Cement slurry with API Class 'G' Cement (HSR), recommended dosage of the vender's additives and laboratory tap water: (salinity 500 ppm) as per Slurry Package (16.2 PPG) of the tender.	
	b. Preparation of LTSOBM: Prepare LTSOBM drilling fluid system for 10 PPG	
	c. Preparation of Spacer: As per recommended dosage of the vender's additives and laboratory tap water (salinity < 500 ppm).	As per API RP 10B-2 clause 13 for weighted spacer including surfactants, 2nd Edn, April 2019 (Re-Affirmed) or as amended from time to time.
B	Test Conditions for rheological & compatibility testing of cement, weighted spacer package & LTSOBM:	
	a. Pressure: Atmospheric b. BHCT: As required or 88°C c. Raising Time (RT): 30 minutes	
C	Results Required:	

	a. Specific Gravity of spacer formulation	≥10% of LTSOBM weight
	b. Spacer Surfactant Screening Test (SSST) at required temperature or 88°C, the surfactants required in weighted spacer for phase inversion from oil wet to water wet	Should achieve baseline conductivity set during starting of SSST in wettability tester at recommended RPM to maintain Vortex as per API 10B-2, 2019 (Re-Affirmed), Section 13
	c. % Spacer Volume in mixture, defined as [(Spacer volume) / (LTSOBM + Spacer Volume)] *100% Spacer Volume required to achieve phase inversion from Oil Wet to Water Wet/external/continuous phase in Wettability Tester Apparatus at required or 88°C, at recommended RPM to maintain Vortex	Should be < 60%
	d. Stability of spacer formulation including surfactants after conditioning at 88°C in atmospheric consistometer for 1 hr after RT.	It should be stable. No sedimentation/ settling No phase separation shall be observed. Sag Factor ≤0.53
	e. Rheological compatibility and Stability of admixtures: R-Index Value (R) Cement slurry: Weighted Spacer Package After conditioning in atmospheric Consistometer at required temperature or 88 °C for 30mins after RT. (Ratio of admixtures of Cement Slurry: Weighted Spacer Package to be taken – 95:5, 75:25, 50:50, 25:75 and 5:95).	R Index 20 (Maximum) It should be compatible and stable during or after mixing. No phase separation shall be observed.

	Where R index [Highest 100 RPM reading from a mixture Highest 100 RPM reading from an individual fluid of particular admixture]	
	f. Rheological compatibility and Stability of admixtures: LTSOBM: Weighted Spacer Package After conditioning in atmospheric Consistometer at required temperature or 88 °C for 30mins after RT. (Ratio of admixtures of LTSOBM: Weighted Spacer Package to be taken at – 95:5, 75:25, 50:50, 25:75 and 5:95). The admixtures dial reading at 300RPM in a standard Rheometer/viscometer should be after conditioning the fluids separately (LTSOBM: Weighted Spacer) & (Cement Slurry: Weighted Spacer) at required temperature, the minor component should be added to major component as per API RP 10B-2 (2019) section 13.2.5.4	It should be compatible and stable. during or after mixing. No sedimentation / settling. No phase separation shall be observed during determination of rheological properties < 300
	g. Thickening time of the base slurry at 5000psi and 90°C performed in HPHT Consistometer, in minutes	Record Thickening Time
	h. Thickening time of the combined admixture (90% base slurry + 10% weighted spacer solution including surfactants) performed in HPHT Consistometer at 5000psi & 90°C, in minutes	It should not be less than thickening time with respect to base slurry, (point VII).
Bidder to undertake that the above LTSOBM spacer can be designed up to 170°C (BHCT).		

Specifications of LTSOBM Formulation (10 PPG) for LTSOBM Spacer:

S.N.	Parameters	Requirement
	Rheological parameters measured at	*120±4°F after hot rolling at 250±4°F for 16 hrs*
1	Mud Weight at 75±4°F (BHR), ppg	10.0 ± 0.1
2	Plastic Viscosity, cP	40 (Maximum)
3	Yield Point, lbs/100 sq. ft	20 – 35
4	Gel_0, lbs/100 sq. ft	10 – 20
5	Gel_{10}, lbs/100 sq. ft	12 – 30
6	6 rpm LSRV, Dial reading	8 - 16
7	O:W ratio	70:30
8	WPS (Cl^-), g/l	170 - 190
8	Emulsion Stability at 120±5°F, volts	550 (Minimum)
10	HPHT Filtration Loss (30 mins at 300 °F/ 500 psi as per API, all oil), ml	5.0 (Maximum)

Table 5: Chemicals and Additives

- Contractor will design the required slurry with the quoted chemicals as per specific packages for various wells as per the actual well conditions. All the testing should be carried out as per schedule API – 10B wherever applicable.
- Cement additives shall be provided as per quoted design of slurry packages. Contractors should submit their slurry design with their own additive for all slurry packages, as per test conditions and desired parameters given in SoW.
- Contractor should submit a copy of test reports in respect of each slurry design against each package. The Slurry parameters other than Static Gel strength analysis (SGSA)/ Gas Migration and Mechanical properties should be duly tested and certified by any of the OIL approved laboratories. SGSA/ Gas Migration Tests and Mechanical Properties Tests are to be carried out at Bidder's laboratory and the same will be acceptable. OIL will accept attested copies of confirmed test reports for all packages not older than 18 months (date of issue) from the date of Original scheduled technical bid opening from any of the previous OIL tenders. Contractor must quote the standard chemicals of its product range, which should be available in the printed catalogue.
- Contractors should be required to supply cement additives at the drilling rig for

carrying out cementing jobs on the rigs. In addition to above, Contractor must provide other additives essential for operations, which are in its product line on as and when required basis to OIL for the slurry design of any specific well conditions and shall become part of the contract. All such purchases will be based on the technical literature and case studies with consultation of the Contractor.

- Contractor is required to keep enough stock of the cement and cement additives based on the wells as per its slurry design/requirement at supply base/ Drilling Unit. Contractor should ensure and maintain minimum stock of 2 well materials per rig, in India, including stock at rigs. Contractor shall envisage the requirement of wells in advance and intimate the same to OIL to obtain the necessary advice to maintain the stock.
- To confirm the quality of bulk additives supplied by the Contractor, OIL reserves the right to check/ test the quality of cement additives at OIL/ Contractor's cement test lab at random as per test reports at any point during the duration of the contract. A variation of 10% on dosages to achieve the desired test parameter shall be accepted without any penalty due to likely variation of quality of cement from batch to batch. For the excess dosages over the allowable 10% variation, OIL shall accept that packages of chemical up to additional 20% of dosages, but the cost impact for these 10% additional dosages for that particular package of chemical will be deducted from the Contractor's invoice. In case dosages of chemicals of any particular package is beyond 30% (10% + 20%), compared to the dosages of chemicals quoted in the bid against the particular package, that particular package shall not be accepted to OIL. Contractor shall identify the faulty constituent and replace the same at its own cost up to OIL supply base/ rig after re-testing as above.

a. All cement additives/ chemicals supplied by the Contractor should confirm to the international packaging standard and should have shelf life of minimum one year. All additives in sacks/drum should be delivered at supply base in proper pallets/ containers for safe & smooth transportation to the rigs.
b. Contractor will provide Oil Well Cement, API Class G in the form of bulk/ sacks. Barite and Bentonite will be provided by respective Mud services providers. All other additives to be provided by Contractor.
c. **Leftover cementing chemicals & additives**: At end of contract, OIL reserves the right to buy the leftover chemicals if required.

d. Contractor must provide its own warehouse facilities for storing cement additives and other casing consumables for all the rigs.

Contractors should provide MSDS, Product catalogue and Technical Bulletin of all the quoted items i.e. cement additives, consumable:

Sr. No.	**Chemical**	**Packaging Size**
1.	API Class 'G' cement	
2.	API Class G cement with 35% Si Flour	
3.	API Class G/H light weight cement	
4.	Bentonite (Gel)	50lb/sack
5.	Sodium Chloride	
6.	Calcium Chloride	
7.	Low-Medium temperature retarder	
8.	Medium-High temperature retarder	
9.	Low-Medium temperature Fluid Loss Additive	
10.	Medium-High temperature Fluid loss additive	
11.	Powdered fluid loss additive	
12.	Extender	
13.	Friction reducer	
14.	Dispersant	
15.	Spacer additives	
16.	Pre-flush chemicals – List them as proposed	

17.	Antifoam Additive	
18.	Anti-gas migration additives – Specify as proposed	
19.	Light Weight Additives	
20.	Surfactants	
21.	Fibrous chemicals as loss circulating material	
22.	Additional chemical and additive but not limited to the above	

Exhibit 2

2. CASING ACCESSORIES

The technical specifications/ requirements for the supply of casing accessories, including cement retainers/bridge plugs, are as follows:

1.0 MATERIAL REQUIREMENT:

Part A: Specifications

Sl. No.	Item	Casing size in inches	Required Specifications
1	Float Shoes	36", 553 lb/ft, X-56, Stab in type, Double valve, float shoe c/w Stab in stinger, Butt Weld Type connections	Manufacturers should be API licensed to apply API monogram on the tools. The tools should meet all category III & C criteria of API spec RP10F. All the float shoes should be PDC drillable.
2	Float Shoes	20", 133 lb/ft, X-56, Stab in type, Double valve, float shoe c/w Stab in stinger Multi Start connections 13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8 lb/ft, LS-140, Premium connections.	Manufacturers should be API licensed to apply API monogram on the tools. The tools should meet all category III & C criteria of API spec RP10F. All the float shoes should be PDC drillable.
3	Float Collars	13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections, Single Valve, c/w Back Pressure Rating of 3500psi and Landing	Manufacturers should be API licensed to apply API monogram on the tools. The tools should meet all category III & C criteria of API spec RP10F. A phenolic load distribution plate shall be

Sl. No.	Item	Casing size in inches	Required Specifications
		Pressure Rating of 3000psi BTC/Premium connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8 lb/ft, LS-140, Premium connections Single Valve, c/w Back Pressure Rating of 5000psi and Landing Pressure Rating of 6000psi BTC/Premium connections.	provided and installed in the float collar at the time of manufacture to provide flat, secure sealing for cement plug. FC should be PDC drillable (except for 20"), and non-rotational type. Maximum test pressure should be specified.
4	Subsea Release Top Plugs	16", 84 lb/ft P-110, BTC connections 13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125 BTC connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8, LS-140 Premium connections.	Should be 5 wiper design, rated for at least 250 deg F with nitrile rubber type available for temperature rating up to 250 Deg F. These shall be PDC drillable and **subsea release type**. Lock down type anti-rotational feature compatible with the float collar is required. Maximum test pressure should be specified.
5	Subsea top plug releasing wiper darts.	16", 84 lb/ft P-110, BTC connections 13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8 lb/ft, LS-140, Premium connections	Drill pipe releasing dart for the above subsea release top plugs. The darts should be drill pipe wiper type.
6	Subsea Release Bottom Plugs	16", 84 lb/ft P-110, BTC connections	Should be 5 wiper design, rated for at least 250 deg F with nitrile rubber type available for temperature rating up to 250 Deg

Sl. No.	Item	Casing size in inches	Required Specifications
		13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8 lb/ft, LS-140, Premium connections	F. These shall be PDC drillable and **subsea release type**. Lock down type anti-rotational feature compatible with the float collar is required. Maximum test pressure should be specified.
7	Subsea bottom plug release balls	16", 84 lb/ft P-110, BTC connections 13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8 lb/ft, LS-140, Premium connections.	Subsea bottom plug release balls for each of the above bottom plugs.
8	Cement retainer convertible to Bridge plugs	13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections 9-5/8" 47 lb/ft, P-110/9-7/8", 62.8 lb/ft, LS-140, Premium connections 7", 32 lb/ft, V-150, Premium connections. 4-1/2", 15.1 lb/ft, P-110, Premium connections.	Mechanical or Wireline set, millable, should hold differential pressure of 5000 psi, built-in two-way valve for opening and closing by stabbing in and out with stinger. Complete with mechanical setting tool and stinger, plus wireline adaptor kits. The retainers shall be procured from reputed international suppliers only.

Part B: Material Requirements

Note: The quantities indicated below are only indicative. The actual quantity mobilised may vary as required. The Contractor shall supply any quantities based on prices quoted in the Bid.

Sl. No.	Equipment	Size	Qty.
A	**FLOAT SHOE, FLOAT COLLAR AND TOP AND BOTTOM PLUGS**		
1	Float shoe	36", 553 lb/ft, X-56, Stab in type, Double Valve c/w Stab in Stinger, Butt Weld connections	1 Per Well
2	Float shoe	20", 133 lb/ft, X-56, Stab in type, Double Valve c/w Stab in Stinger, Multi Start connections	1 Per Well
3	16" Top Cement plug, non-rotating lock down type, Oil resistant, subsea release	16", 84 lb/ft, P-110, BTC connections	1 Per Well
4	Releasing dart for the above top plug.	For the plug above	1 Per Well
5	16" Bottom Cement Plug, non-rotating, PDC drillable, Oil resistant, subsea release	16", 84 lb/ft, P-110, BTC connections	1 Per Well
6	Releasing ball for the above bottom plug	For the plug above.	1 Per Well
7	Float shoe, PDC drillable	13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections	1 Per Well
8	Float collar, PDC drillable, anti-rotational	13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft, Q-125, BTC connections	1 Per Well
9	13-3/8"/13-5/8" Top Cement plug, Nonrotating lock down type, PDC drillable, Oil resistant, subsea release	13-3/8" 72 lb/ft/ 13-5/8" 88.2 lb/ft, Q-125, BTC connections	1 Per Well
10	Releasing dart for the above top plug.	For the plug above	1 Per Well

Sl. No.	Equipment	Size	Qty.
11	13-3/8”/13-5/8” Bottom Cement Plug, Nonrotating, PDC drillable, Oil resistant, subsea release	13-3/8” 72 lb/ft/13-5/8” 88.2 lb/ft, Q-125, BTC connections	1 Per Well
12	Releasing ball for the above bottom plug	For the plug above.	1 Per Well
13	Float shoe, PDC drillable	9-5/8” 47 lb/ft, P-110/ 9-7/8”, 62.8 lb/ft, LS-140, Premium connections	1 Per Well
14	Float collar, PDC drillable, anti-rotational	9-5/8” 47 lb/ft, P-110/9-7/8” 62.8 lb/ft, LS-140, Premium connections	1 Per Well
15	9-5/8”/9-7/8” Top Cement plug, non-rotating lock down type, PDC drillable, Oil resistant, subsea release	9-5/8” 47 lb/ft, P-110/9-7/8”, 62.8 lb/ft, LS-140, Premium connections	1 Per Well
16	Releasing dart for the above top plug.	For the plug above	1 Per Well
17	9-5/8”/9-7/8” Bottom Cement Plug, Nonrotating, PDC drillable, Oil resistant, subsea release	9-5/8” 47 lb/ft, P-110/9-7/8”, 62.8 lb/ft, LS-140, Premium connections	1 Per Well
18	Releasing ball for the above bottom plug	For the plug above.	1 Per Well
B	**CEMENT RETAINERS / BRIDGE PLUGS**		1 Per Well
1	Cement Retainers convertible to Bridge plug c/w bridge plug conversion kit, wireline adapter kit, and mechanical setting tool	13-3/8” 72 lb/ft/13-5/8” 88.2 lb/ft casing	1 Per Well
2	Cement Retainers convertible to Bridge plug c/w bridge plug conversion kit, wireline adapter kit, and mechanical setting tool	9-5/8” 47 lb/ft/9-7/8” 62.8 lb/ft casing	1 Per Well

Sl. No.	Equipment	Size	Qty.
3	Cement Retainers convertible to Bridge plug c/w bridge plug conversion kit, wireline adapter kit, and mechanical setting tool	7" 32 lb/ft casing	1 Per Well
4	Cement Retainers convertible to Bridge plug c/w bridge plug conversion kit, wireline adapter kit, and mechanical setting tool	4-1/2" 15.1 lb/ft casing	1 Per Well
C	**CENTRALIZERS**		
1	New Generation Single Body Casing integral bow type Centralizer with stop collars per well as per API 10D (Moulded Single piece new generation Centralizer) One-piece slip-on type with set screws. Non-welded design. Manufactured from high grade, heat-treated steel. Stop collars have a high-quality powder coated finish.	20" Casing x 26" hole	6 per well
2	New Generation Single Body Casing integral bow type Centralizer with stop collars per well as per API 10D (Moulded Single piece new generation Centralizer) One-piece slip-on type with set screws. Non-welded design. Manufactured from high grade, heat-treated steel. Stop collars have a high-quality powder coated finish.	16" Liner x 20" hole	5 per well

Sl. No.	Equipment	Size	Qty.
3	New Generation Single Body Casing integral bow type Centralizer with stop collars per well as per API 10D (Moulded Single piece new generation Centralizer) One-piece slip-on type with set screws. Non-welded design. Manufactured from high grade, heat-treated steel. Stop collars have a high-quality powder coated finish. **Note: 13-3/8"/13-5/8" Centralizers are to be close/tight tolerance designed to pass through 16", 84 lb/ft Liner**	13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft Casing x 17-1/2" hole	20 nos. per well
4	New Generation Single Body Casing integral bow type Centralizer with stop collars per well as per API 10D (Moulded Single piece new generation Centralizer) One-piece slip-on type with set screws. Non-welded design. Manufactured from high grade, heat-treated steel. Stop collars have a high-quality powder coated finish. **Note: 9.5/8"/9-7/8" Centralizers are to be close/tight tolerance designed to pass through 13-3/8" 72 lb/ft / 13-5/8" 88.2 lb/ft Casing**	9-5/8" 47 lb/ft/9-7/8" 62.8 lb/ft Casing x 12-1/4" hole	30 No' per well

Sl. No.	Equipment	Size	Qty.
5	New Generation Single Body Casing integral bow type Centralizer with stop collars per well as per API 10D (Moulded Single piece new generation Centralizer) One-piece slip-on type with set screws. Non-welded design. Manufactured from high grade, heat-treated steel. Stop collars have a high-quality powder coated finish.	7" Liner x 8 1/2" hole	30 No's per well
6	New Generation Single Body Casing integral bow type Centralizer with stop collars per well as per API 10D (Moulded Single piece new generation Centralizer) One-piece slip-on type with set screws. Non-welded design. Manufactured from high grade, heat-treated steel. Stop collars have a high-quality powder coated finish.	4-1/2" Liner x 5-7/8" hole	30 No's per well
D	**STOP COLLARS FOR CENTRALIZERS**		
1	Stop Collar, hinged c/w nails	20"	2 No's per well per size
2	Stop Collar, hinged c/w nails	16"	2 No's per well per size

Sl. No.	Equipment	Size	Qty.
3	Stop Collar, hinged c/w nails **Note: 13.3/8"/13-5/8" Stop Collars are to be close/tight tolerance designed to pass through 16", 84 lb/ft Liner**	13-3/8" 72 lb/ft/13-5/8" 88.2 lb/ft	2 No's per well per size
4	Stop Collar, hinged c/w nails **Note: 9.5/8"/9-7/8" Stop Collars are to be close/tight tolerance designed to pass through 13-3/8" 72 lb/ft / 13-5/8" 88.2 lb/ft Casing**	9-5/8" 47 lb/ft/9-7/8" 62.8 lb/ft	2 No's per well per size
5	Stop collars, hinged c/w nails	For 7" 32 lb/ft	2 No's per well per size
6	Stop collars, hinged c/w nails	For 4-1/2" 15.1 lb/ft	2 No's per well per size
E	**CASING SPIROLIZERS WITH STOP COLLARS PER WELL (SOLID RIGID BODY, SPIRAL VANE, ALUMINIUM CAST BODY)**		
1	Casing Spirolizers	13-3/8"/ 13-5/8" x 16"x 84 lb/ft Liner	05 nos. per well
2	Casing Spirolizers	9-5/8", 47 lb/ft/9-7/8", 62.8 lb/ft x 13-3/8"x 72 lb/ft /13-5/8", 88.2 lb/ft casing	20 No's per well
3	Casing Spirolizers	7" 32 lb/ft	20 No's per well
4	Casing Spirolizers	4-1/2", 15.1 lb/ft	20 No's per well

Part C: Miscellaneous requirements

Sl. No.	Item	Unit of Measurement	Qty.
1	Thread lock compound, Baker -Lok or equivalent	Kit	10 Kits per well
2	Casing dope (API modified) for BTC casing	Pail	5 pails per well
3.	Casing dope (API modified) for Gas tight premium casing	Pail	5 pails per well

NOTES:

1. All centralizers should meet the specifications as mentioned in the generic well design provided above and need to be as per API standards.
2. 13-3/8”/13-5/8” and 9-5/8”/9-7/8” float equipment to be PDC drillable.
3. Equipment to be supplied should have full sets of Certifications as per necessary standards.
4. All equipment wherever applicable should be API monogrammed.
5. The equipment provided should not be more than one year old.
6. Company at its discretion may order all or part of the equipment covered under the scope of work from the Contractor.
7. All the Casing Accessories required for 5-7/8” Hole Size are on Callout Basis.

Note for Preparation of Technical Proposal:

i. Contractor shall be required to submit the following in support of their technical competence to undertake the supply as per the Tender Requirements:
ii. Technical details of the materials offered. This shall include technical specifications, dimensions etc.
iii. Copies of API certificate(s) for the last 5(five) years **preceding the original bid closing date** without any break in between for the materials offered. (Wherever applicable)

iv. Details showing successful past supply history (for the materials offered) in last 5(five) years **preceding the original bid closing date** along with documentary evidence.

v. List of current customers and contact names in the region.

vi. Details of the materials readily available (Ex stock)

vii. Contractors shall demonstrate adequate technical support to undertake the supply.

viii. QA/QC procedures/systems in the OEM's manufacturing processes.

2.0 Delivery Point:

For Contractor: At Company's Shore Base, Kakinada, India on DDP destination basis.

Delivery Schedule: The Goods covered in this document are to be delivery at the designated delivery point.

3.0 Inspection:

Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company at any time during the duration of the contract.

3. CASING & TUBING RUNNING SERVICES

1.0 SCOPE OF WORK

The Scope of Work will include but not be limited to:

Providing the casing running tools and services which are suitable for all casing strings listed in the introductory section of this scope of work, plus 4-1/2", 3-1/2", 2-7/8" and 2-3/8" test tubing.

In addition to the above, the Contractor shall carry out the following:

i. Maintenance of the tools and equipment.
ii. Updating tool inventory.
iii. A monthly inventory for the entire rental tools and consumables.
iv. A monthly report on consumables consumed in the well with the details of replenishment of the stock to maintain the spares level.
v. Tracking movement of tools from shore to rig and station authorized and qualified personnel to supervise loading and offloading at both shore and rig.
vi. Provide Tools running/Job records, any recommendations, and any other reports as requested.
vii. Equipment failure reports.
viii. Providing any other programs or reports relevant to the operations and to the Contract.

2.0 EXPERIENCE

The CTR Services Provider should have minimum five (5) years of experience in providing the Casing and Tubing Running Services to Drilling/E&P Companies with at least three (03) years in offshore areas.

3.0 CONTRACTOR TO PROVIDE

Contractor shall be able to provide all equipment, labour, materials, and services specified herein and in the Compensation Schedule. Contractor shall be solely responsible for the

operation of Contractor's Equipment including but not limited to the rigging up/preparation, testing, running and rigging down thereof.

3.1 Approvals

Contractor shall submit to Company for approval prior to the Commencement Date:

a) All Contractors tools and equipment with complete specifications.
b) List of minimum recommended spares.
c) Preventive maintenance schedule and plan for all Contractor's Equipment.
d) Contractor's safety manual and procedures.
e) Detailed Mobilisation Schedule.

3.2 Bidder to provide along with the bid.

a) Detailed technical specifications of the tools and equipment that the Contractor intends to provide.
b) Detailed mobilization schedule.
c) Detailed HSE plan and procedures.
d) Nearest base with redressing facilities from which the intended tools will be mobilized.

4.0 EQUIPMENT LIST FOR CASING AND TUBING RUNNING SERVICES

The equipment list is attached to this exhibit.

The Company at its discretion can order the equipment and tools in part or in full as per this Scope of Work. The Company at its discretion can also reduce or increase the quantity of equipment and tools to be ordered.

5.0 PERSONNEL

5.1 Casing Crew Chief for Casing and Tubing running services:

Casing Crew chief will be responsible for performing the following tasks:

a) Maintain an inventory of all tools being provided as part of Casing Running Service. This inventory will also show whether the tools are at the Shore base, Supply vessels or the Drilling Unit.

b) Co-ordinate the stocking of tool spares.

c) Write Failure Reports if required.

d) Maintenance of all tools and ensuring that the tools are properly stored and organized.

e) Evaluate the condition of the equipment/tools in storage.

f) Update the equipment inventory.

g) Prepare a monthly inventory report.

h) Track movement of tools from shore to rig and back.

i) Make shipping manifest for all tool movements.

j) Organize the tools for transport.

k) Prepare necessary arrangements to have the tools loaded and offloaded from the supply vessels.

l) Prepare a monthly consumable consumption list with details of replenishment of stock certified and approved by the Company base manager.

m) Maintain a weekly summary of tools used in the operation.

n) Prepare the final shipping lists at the end of the project.

o) The Crew Chief will act as liaison between the customer representative, drill crew, and casing running personnel. His tasks will include toolbox safety meetings and repair/service/operation of all Casing running equipment, logistics of equipment and personnel related to the work and, administration of the Contractor's Day to day affairs under the Contract. He shall be available for consultation at all times for the duration of the Contract. The crew chief will have the ability to operate all casing running equipment replacing one member of the existing personnel.

p) Responsible for inspection, measurement of casings on the deck.

q) Responsible for setting up and operation of Torque Turn Analysis system for premium casings.

r) Coordinate with the Company's Finance department to raise correct invoices with all support documents, ensure that variations to contract (if any) are in place and in general to try and reduce all disputes pertaining to raising/payment of invoices. He will also be responsible for all bidder equipment that is to be exported and imported out of the country and should be able to certify on behalf of the Bidder.

5.2 Casing Crew for Casing and Tubing running services (Tong Specialist, Casing Stabber):

The casing crew will perform, not limited to, the following tasks:

a) Ensure all equipment is ready to be picked up and operated as per instructions from Company representative at all times.
b) Maintain all Casing running tools, Power pack and other tools at the shore base and on the rig in excellent running condition.
c) Present a list of accessories and make necessary arrangements that must be replaced after use due to wear or loss. (e.g., tong dies, tam packer rubbers etc).
d) Make recommendations to improve future operations.
e) Maintenance of all tools, equipment and spare parts.
f) Carry out jobs as per Company's request within the capacity of the Contract.

5.3 Schedules for Casing crew chief and Casing Running Crew

All offshore personnel must be approved by Company prior to commencement. Casing crew will be provided on rotation basis or as otherwise agreed. Full CV's of all the proposed personnel should be submitted to the Company (for approval) prior to the commencement. All Expatriate Personnel need to hold valid Government clearances and Visas to work which shall be the responsibility of the Contractor.

Note: All personnel are to have valid offshore certificates to work in offshore platform and drilling unit as per local regulatory requirements.

5.4 Kakinada based Coordinator (Base Coordinator)

The coordinator should be an experienced engineer for the services to be based in Kakinada or as designated by Company and be the focal point for all communication between the Company and the Contractor. He should be responsible for, but not limited to, the following:

a) Attending all pre-spud and pre-job meetings and to be available for consultation at all times during the duration of the Contract.

b) All Bidder's equipment that are to be exported and imported out of the country and shall certify that the equipment is imported or re-exported on behalf of the Bidder.

c) Coordination of all logistical movement of the Bidder's equipment and prepare all documentation required in consultation with the Company's Logistics/Commercial Departments.

d) Coordination with the Company's Finance department in order to raise correct invoices with all support documents, ensure that variations to contract (if any) are in place and in general to try and reduce all disputes pertaining to raising/payment of invoices.

6.0 REPORTING

6.1 General

Contractor shall comply with the following reporting requirements as a minimum. Contractor shall also provide additional reports to the Company Representative as may reasonably be requested during the Work.

a) Updated list of tools being provided on board.
b) Maintenance and inspection reports for all tools.
c) Updated tool inventory.
d) Complete file of detailed manifests of equipment sent to and from the Drilling Unit.
e) Providing job running records, recommendations, tool failure reports and any other reports as reasonably requested.
f) A daily and weekly summary of tools used in the operation.
g) Summary of all operations with their tools.
h) Summary of any equipment failures.
i) A list of accessories that must be replaced after use due to wear or loss.
j) A monthly report of the inventory and consumable consumption.

6.2 Tools and Equipment Inventory

Contractor shall maintain an up-to-date inventory of all tools and equipment held on the Drilling Unit, Shore Base, workboats or elsewhere. This report shall be submitted on a weekly basis to the Company Representative. Contractor is responsible to ensure that tools are picked up, made-up, operated and laid down according to the Contractor's Operating Guidelines and Procedures, which shall be approved by the Company prior to the commencement of operations.

6.3 End of Well Report

Contractor shall provide the following end of well reports within 14 days of the end of each well for each of the services provided as applicable:

a) A detailed recap of each job, including time breakdown.
b) A recap of any problems and equipment failures running the casing handling tools along with recommendations on how to prevent them.
c) A detailed cost breakdown by section for all of the tools and equipment provided.
d) A summary of all operations with their tools.
e) A Lessons Learned Document with any recommendation to improve and optimize future jobs.
f) A final list of accessories that must be replaced use due to wear or loss (e.g., slip inserts)
g) A mobilisation plan for any tools that must be replaced including shipping time, cost, and importation plan.
h) A demobilization plan at the end of the project showing destination for all of the tools, estimated shipping time and export plan.

6.4 Sample Reports

The final reporting format will be agreed upon with the Company prior to the commencement of work.

7.0 EQUIPMENT

7.1 Additional Equipment

The Contractor's standard price list with applicable discount of equipment and services is to be listed as an attachment**.** Contractor shall maintain adequate stocks of consumables and accessories to manage the operation of the work in a remote location.

7.2 Maintenance

Upon request by Company, Contractor shall provide proof of maintenance and service history of all items of equipment supplied.

7.3 Equipment to be Operational:

Contractor shall maintain all equipment in such operating condition to prevent downtime or waiting on equipment during operation. All spares required for the service of the equipment and tools shall be provided by the Contractor. Contractor's equipment shall be inspected and certified by relevant API standards as a minimum. Contractor shall supply all the relevant certification along with next inspection date to the Company prior to the commencement of operations.

7.4 Inspection

Bidder should maintain all equipment in such operating condition to prevent downtime or waiting on equipment during operation. All spares required for the service of the equipment and tools shall be provided by the bidder. Bidder equipment shall be inspected and certified by relevant API standards as a minimum. Bidder shall supply all the relevant certification along with next inspection date to the Company prior to the commencement of operations.

7.5 CRT Make to be one of the following:

A) ODFJELL
B) WEATHERFORD
C) TESCO
D) NOV
E) PARKER
F) FRANK

8.0 LOGISTICS

8.1 Shore Base

The contractor is required to mobilize all its equipment, spares, etc to the Shore Base at Kakinada, Andhra Pradesh, India. Company at its discretion may mobilize all or part of the tools and equipment listed in the final contract. All the equipment, spares etc. supplied by the Contractor to the Company under the contract, shall be stored in Contractor's facilities at Kakinada and shall be delivered at Shore Base at Kakinada as per operational requirement and when instructed by the Company.

8.2 Load Testing

All lifting and load bearing equipment of the Contractor shall be certified prior to shipment to the drilling unit, and all relevant certifications shall be available for inspection. All

toolboxes and containers must be sent with certified slings, and a copy of the certification should be sent with the equipment. The slings should be clearly identifiable as belonging to the Contractor.

9.0 SUPPORT SERVICES

9.1 Logistical Support

Contractor will be responsible to make all the necessary tools and equipment available at shore base at Kakinada before job. The Company shall be responsible for the transportation of necessary equipment and tools along with necessary spares from shore base to the rig site.

9.2 New Developments

Contractor shall make available to Company in as much as it is not constrained by agreements of confidentiality, details of any on-going research and development activities that it is undertaking, and which may be relevant to the Company's operation.

10.0 Equipment List

I. Casing Handling Tools Package per Rig (Casing Specific tools) –

(Requirement below is for one (1) Rig operation. Same set of tools will be required extra during Two (2) Rig operations)

Sl. No.	Description	Qty.
A	**GENERAL**	
A.1	**36" casing**	
1	Split type bushings for 36" casing to fit in 37.5", 49.5" or 60.5" Rotary Table (to be confirmed once the rig is selected)	1
2	36", 350-ton, Side door elevator with all spares	2
3	36", J type, Single joint elevator with slings/shackles and spares	2
4	36" Rotary hand slips with all spares	1
5	36" safety clamps with all spares	1
6	36" hinge type casing spider.	1
7	36" C plate and hand slips to run 5" / 5-1/2" / 5-7/8" drill pipe as stinger.	1 set
8	Petol chain tong/Petol sure grip tong for 36" casing	1 set
A.2	**20" Casing**	
1	Split type bushings for 20" casing to fit in 37.5", 49.5" or 60.5" Rotary Table (to be confirmed once the rig is selected)	1

Sl. No.	Description	Qty.
2	20" 250-ton, Side door elevator with all spares	2
3	20" J type, Single joint elevator with slings/shackles and spares	2
4	20" Rotary hand slips with all spares	1
5	20" C type safety clamps with all spares	1
6	20" C plate and hand slips to run 5" / 5-1/2" / 5-7/8" drill pipe as stinger.	1
7	Casing drift 20", 133 lb/ft (Metallic/Teflon)	1
8	Stabbing Guide for 20" Casing	2
9	20" Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
A.3	**16" Liner**	
1	Split type bushings for 16" Liner to fit in 37.5", 49.5" or 60.5" Rotary Table (to be confirmed once the rig is selected)	1
2	16" multi segment casing slip with full complement of circular bottom segments and spares to run 16" Liner.	2
3	16" 250-ton, Side door elevator with all spares	2
4	16" J type, Single joint elevator with slings/shackles and spares	2
5	16" Rotary hand slips with all spares	1
6	16" C type safety clamps with all spares	1
7	16" C plate and hand slips to run 5" / 5-1/2" / 5-7/8" drill pipe as stinger.	1
8	Casing drift 16", 84 lb/ft (Metallic/Teflon)	2
9	Stabbing Guide for 16" Casing	1
10	16" Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
A.4	**13-3/8" Casing**	
1	Split type Bushings for 13-3/8" casing to fit in 37.5", 49.5" or 60.5" Rotary Table (to be confirmed once the rig is selected) with split bowels for 13-3/8" and 9-5/8" casing.	1
2	13-3/8" multi segment casing slip with full complement of circular bottom segments and spares to run 13-3/8" casing.	2
3	13-3/8", 250-ton, Side door Elevator with all spares	2
4	13-3/8" J type, Single Joint Elevator with slings/shackles and spares	2
5	13-3/8" C type Safety clamp with all spares	1
6	13-3/8" Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
7	Casing drift (Metallic/Teflon), 13-3/8", 72 lb/ft	2
8	Stabbing Guide for 13-3/8" Casing	2
A.5	**13-5/8" Flush Casing (on call out)**	
1	Hand slips	2
2	Single Joint Elevator	2
3	Elevators slip type, 150T-350T	2
4	13-5/8" 250-ton, Side Door Elevator with all spares	2
5	13-5/8" Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
6	Casing drift (Metallic/Teflon), 13-5/8", 88.2 lb/ft	2

Sl. No.	Description	Qty.
7	Circulating Swage (Top drive to casing)	2
8	Safety clamps	2
9	Lift Nubbins for flush joints	4
10	Stabbing Guide for 13-5/8" Flush Casing	2
A.6	**9-5/8" Casing**	
1	9-5/8" multi segment casing slip with full complement of circular bottom segments and spares to run 9-5/8" casing.	2
2	9-5/8", 350-ton, Side door Elevator with all spares	2
3	9-5/8", J type, Single Joint Elevator with slings/shackles and spares	2
4	9-5/8", C type Safety clamp with all spares	2
5	9-5/8", Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
6	Casing drift 9-5/8", 47 lb/ft, (Metallic/Teflon type)	2
7	Stabbing Guide for 9-5/8" Casing	2
8	Casing Running Tool (CRT) having a provision to run premium casing having torque turn equipment installed for 9-5/8" and 7" casing (CRT to be Hydraulic latch type)	1
A.7	**9-7/8" Flush Casing (on call out)**	
1	Hand slips	2
2	Side Door Shoulder Type Elevators,150-500T	2
3	Single Joint Elevators	2
4	Slip Type Elevator (Flush/Semi Flush Joints) 150-350T	2
5	9-7/8",Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
6	Casing drift 9-7/8", 62.8 lb/ft , (Metallic/Teflon type)	2
7	9-7/8", C type Safety clamp with all spares	2
8	Circulating Swage (Top drive to casing)	2
9	Lift Nubbins for Flush Pipe	4
10	Stabbing Guide for 9-7/8" Flush Casing	2
A.8	**7" Liner**	
1	7" multi segment casing slip with full complement of circular bottom segments and spares to run 7" casing	2
2	7", 150-ton, Side door Elevator	2
3	7", J type, Single Joint Elevator with slings/shackles and spares.	2
4	7", C type Safety clamp	2
5	7", Klepo/Clamp-on Quick Release Thread Protectors (pneumatic type preferred)	3
6	Casing drift 7", 32 lb/ft, (Metallic/Teflon type)	2
7	Stabbing Guide for 7" 32 lb/ft Liner	2
A.9	**4-1/2" Liner (on call out)**	
1	4-1/2" multi segment casing slip with full complement of circular bottom segments and spares to run 4-1/2" casing	2
2	4-1/2", 150-ton, Side door Elevator	2
3	4-1/2", J type, Single Joint Elevator with slings/shackles and spares.	2
4	4-1/2", C type Safety clamp	2

Sl. No.	Description	Qty.
5	4-1/2", Quick Release Thread Protectors (pneumatic type preferred)	3
6	Casing drift 4-1/2", 15.1 lb/ft, (Metallic/Teflon type)	2
7	Stabbing Guide for 4-1/2" 15.1 lb/ft Liner	2
A.10	**Manual Tongs**	
1	Full set Manual Casing Tongs to cover the Casing range from 36", 20" and 16" c/w jaws for 36", 20" and 16" casings	1 Set
2	Full set Manual Casing Tongs to cover the Casing range from 13-3/8"/13-5/8", 9-5/8"/9-7/8" to 7" c/w jaws for 13-3/8"/13-5/8", 9-5/8"/9-7/8" and 7" casings	1 Set
3	Full set Manual Tongs to cover the range from 2-3/8" to 4-1/2" c/w jaws for 2-3/8", 2-7/8", 3-1/2" and 4-1/2"	1 Set each
A.11	**Flush Mounted (FMS) Slips**	
1	500 Ton Flush mounted slips (Hydraulic) for 13-3/8"/13-5/8", 9 5/8"/9-7/8" / 7" and 4-1/2" Liner	1 Set
A.12	**Hydraulic Power tong for 4-1/2" through 2-3/8" c/w Torque Gauge and one set of Jaws for each tubing size**	2
1	Jaws for 4-1/2" tubing	2 set
2	Jaws for 3-1/2" tubing	2 set
3	Jaws for 2-7/8" tubing	2 set
4	Jaws for 2-3/8" tubing	2 set
A.13	**2-3/8" Tubing, P110, 5.5 ppf, with premium connection**	
1	2-3/8", 50/75-ton Square Shoulder Elevator	2
2	2-3/8" Single Joint Elevator with all spares	2
3	2-3/8" tubing Rotary Hand Slips	2
4	API drift, Metallic	2
A.14	**2-7/8" Tubing, P110, 7.9 ppf, with premium connection**	
1	2-7/8", 50/75-ton Square Shoulder Elevator	2
2	2-7/8" Single Joint Elevator with all spares	2
3	2-7/8" tubing Rotary Hand Slips	2
4	API drift, Metallic	2
A.15	**3-1/2" Tubing, P110, 12.70 ppf, with premium connection**	
1	200-ton elevators for 3-1/2" tubing	2
2	Single joint elevator for 3-1/2" tubing	2
3	Hand slips for 3-1/2" tubing	2
4	Safety Clamp	2
5	Stabbing Guide for 3-1/2" tubing	2
6	Tubing drift 3-1/2", 12.70 ppf, (Teflon type)	2
A.16	**4-1/2" Tubing, P110, 26.10 ppf, with premium connection***	
1	450-ton elevators for 4-1/2" tubing	2
2	Single joint elevator for 4-1/2" tubing	2
3	Hand slips for 4-1/2" tubing	2
4	Safety Clamp	2

Sl. No.	Description	Qty.
5	Stabbing Guide for 4-1/2" tubing	2
6	Tubing drift 4.1/2", 26.10 ppf, (Teflon type)	2
B	**Power units and tongs etc,**	
B.1	**Diesel Hydraulic Power unit c/w 100 ft of Hydraulic hoses, spark arrestor, High and Low-Pressure Hose, and Work stand, emergency shutdown for zone II hazardous environment.**	2
B.2	**Torque Turn Analysis system (JAM unit equivalent) for Zone II area for 20", 16", 13-3/8"/13-5/8", 9-5/8"/9-7/8", 7" & 5-7/8" premium connection.**	2
B.3	**Hydraulic Power tong to cover casing size from 20", 16", 13-3/8"/13-5/8" through 7" c/w Torque Gauge and set of Jaws for each 13-3/8"/13-5/8", 9-5/8"/9-7/8", 7" and 4-1/2" casings.**	2
1	Jaws for 20" casing	2 set
2	Jaws for 16" casing	2 set
3	Jaws for 13-3/8"/13-5/8" casing	2 Set
4	Jaws for 9-5/8"/9-7/8" casing	2 Set
5	Jaws for 7" Liner	2 set
6	Jaws for 4-1/2" Liner	2 set
B.4	500 Ton Long elevator links to match Drilling Unit requirements 18 Feet long x 4-1/2" Shank Dia	2
B.5	500 ton pneumatic / hydraulic spider with accessories and inserts for 20" and 16" casings	1
B.6	500 ton pneumatic/hydraulic spider elevator with accessories and inserts for 20" and 16" casings	1
B.7	500 ton pneumatic/hydraulic spider with accessories and inserts for 13-3/8"/13-5/8", 9-5/8"/9-7/8", 7" and 4-1/2" casings	1
B.8	500 ton pneumatic/hydraulic spider elevator with accessories and inserts for 13-3/8"/13-5/8", 9-5/8"/9-7/8", 7" and 4-1/2" casings	1
C	**Cargo baskets and Spares**	
C.1	Cargo Baskets (as required) to Store and transport tools between supply base and rig safely (along with slings and shackles)	1 lot
C.2	Contractor to provide list of Minimum spares for all the above tools and equipment including but not limited to die inserts for slips, tongs, elevators etc	As required
C.3	Additional Equipment not mentioned above but required for completion of the job	As required

Note: 1. Contractor to ensure that Inspection and Testing of all the Casing Handling Tools to be done as per OEM criteria and relevant API standards.

2. A.16* Same Handling Tools may be used for 4-1/2" Tubing, P110, 26.10 ppf, with premium connection and 4-1/2" Tubing, P110, 15.20 ppf, with premium connection. If 4-1/2" Tubing, P110, 15.20 ppf, with premium connection requires separate handling tools, the bidder shall provide them without any additional cost to company.

11. Crew Requirement per rig on call-out basis

Contractor shall mobilize following crew as per job requirement and in consultation with OIL.

S.No.	Category	No. of persons per rig for 24 hrs. operations	Experience
1	Casing & Tubing Running Supervisor	1 No.	Casing & tubing Running Supervisor shall have three years of experience in Tubing/Drill pipe/Drill Collar/ casings running operations.
2	Casing & Tubing Running Operator	4 Nos	Casing & tubing Running Operator shall have three years of experience in Tubing/Drill pipe/Drill Collar/casings running operations.

12. Torque Turn System (TTS) services for Casing & Tubing strings

I. TTS Equipment (During 1 Rig Operation)

The Contractor is required to carry out the Computerized Torque Turn Services & to maintain and operate all equipment and systems as per given scope of work.

S.No.	Description	Qty per rig
1	• 4-1/2"-13-3/8" casing pipes • All tubing for 2-3/8" to 4-1/2" strings	1 Set (1 Main+ 1 backup)

II. TTS Equipment (During 2 Rig Operation)- Additional requirement

S.No.	Description	Qty per rig
1	• 4-1/2"-13-3/8" casing pipes • All tubing for 2-3/8"- 4-1/2" strings	1 Set (1 Main)

Age of Equipment: The age of all the TTS equipment shall not be more than 6 years as on closing date of the tender.

III. Crew Requirement per rig on call-out basis

Contractor shall mobilize following crew as per job requirement and in consultation with OIL:

Sl. No.	Category	No. of persons per rig	Function & Experience
1	CAM Operator	02	Complete co-ordination & follow-up of operation and maintenance of equipment, preparation of job plan, job execution, preparation of report etc. 3 years' experience as CAM Operator in last 5 years on offshore rigs.

13. General terms & Conditions

- All the Casing and Tubing Running Services required for 5-7/8" Hole Size are on Callout Basis.
- The Contractor is required to provide to OIL, the complete list of equipment along with test & inspection certificates at the time of inspection.
- Contractor personnel will be responsible for proper / correct handling of Casing and tubing, its storage and maintenance. A proper stabbing guide / safety clamp to be used as and when required.
- The Contractor shall keep required manpower in readiness as per conditions of the Contract.
- The Contractor shall keep all the equipment in readiness throughout the contract

period.

- The Contractor must handle different type of casings and tubing.
- Entire operation will be on a round-the clock basis. Once the operation starts the Contractor should ensure the continuation of job without any interruption. In no case job should be stopped.
- Depending upon the job requirements, personnel of any of the referred categories can be increased & decreased in consultation with the Contractor. OIL normally give fourteen days' notice for increase or decrease in the number of crew.
- The Contractor is required to provide experienced & competent personnel in compliance with the crew composition & "Experience" to perform all activities related to tubular services in professional manner following Internationally recognized safe practices.

13.1 The Scope of work regarding handling of the casings is given below both at base and Rig as applicable:

1) The Contractor must take full responsibility for proper handling of all types of casings & crossovers
2) The Contractor must keep all the threads properly cleaned, inspected and handled so to prevent damage. All the threads should be free of any dirt, paint and storage compound or thread compound.
3) Safety Clamps (welding band, Dog Collar) need to be used for all flush joint connections.
4) The tongs should be in good condition with jaws that correctly fit the pipe.
5) Make up torque must be accurately measured and controlled.
6) When pipe is stored on the rack or is being moved, the threads should be properly cleaned and protected from hitting other surfaces and covered with thread protectors.
7) Prior to inspection, thread should be thoroughly cleaned and dried.
8) Where applicable, seal rings shall be installed after thread inspection. Both the seal ring and seal ring grooves shall be cleaned and dried prior to its installation in original position. Care should be taken to ensure that the ring fits properly and is firmly seated onto the groove.
9) Extreme care should be taken while handling the pipe. Pipe is not to be moved unless the threads are protected. Pipe should be lifted with straps rather than hooks and single joint elevators are preferred.

10) Contractors must provide API modified, thread compound.
11) Proper stabbing and initial thread engagement must be ensured critically. Stabbing guide to be removed, after stabbing, by rotating the pipe by hand to ensure proper thread engagement. If the weight of the pipe prohibits turning by hand, turn very slowly with tongs / chain tongs. The stabber must not rock the pipe during initial stab or make up.
12) Make up of thread, by Power Tongs at a steady and controlled speed, preferably at 10-15 RPM back up tong may be required until sufficient string, weight is developed, however, back up tong should not be set over the box thread.
13) Pipe is to be tightened as per the torque values of the respective Pipe. A connection will only be accepted if the torque is between the minimum and maximum torque value.
14) While pulling out / breaking Pipe, a steady, controlled speed must be ensured until the pin jumps inside the box. Misalignment must be reduced during the lifting process.
15) Weight compensators must be used to reduce thread galling during break out and compensator weight needs to be adjusted to thread loading.
16) Rotation has to be stopped when the pin jumps inside the box. Stabbing guide has to be used prior to lifting of the pin out of the box.
17) The Contractor shall maintain his equipment in ready to use condition and deploy to offshore Rig.
18) Proper and permanent record of each joint must be provided covering torque, time and turns and the respective curves are to be provided. No more than two make up curves shall be displayed on a sheet of paper. The peak of the torque should be clearly indicated in the curves to ensure appropriate/optimum torque is achieved for sealing.

However, Contractor must obtain full and complete information regarding use of all tubulars including casing and tubing.

Exhibit 4

4. DRILLING TOOLS, HOLE OPENERS, UNDER REAMERS, MULTIPLE ACTIVATION CIRCULATION BYPASS SUB (MACB) & WELLBORE CLEAN OUT (WBCO) SERVICES

1.0 SCOPE OF WORK

The Scope of Work will include but not be limited to:

Providing the Rental Drilling Tools Services which are suitable as this scope of work.

Contractors shall mobilise the Hole openers and Under reamers as per operational requirement as mentioned below.

Contractors shall provide Multiple Activation Circulation Bypass (MACB) tools and services in drill string with BHA for drilling Vertical / Directional wells especially in loss prone areas.

Contractors shall provide the Wellbore Cleanout (WBCO) tools and services as per OIL requirement on call out basis.

In addition to the above, the Contractor shall carry out the following:

i. Maintenance of the tools and equipment.
ii. Updating tool inventory.
iii. A monthly inventory for the entire rental tools and consumables.
iv. Tracking movement of tools from shore to rig and station authorized and qualified personnel to supervise loading and offloading at both shore and rig.
v. Provide Tools running/Job records, any recommendations, and any other reports as requested.
vi. Equipment failure reports.
vii. Providing any other programs or reports relevant to the operations and to the Contract.

2.0 EXPERIENCE

The Contractor should have minimum five (5) years of experience in providing the Drilling Rental Tools Services to Drilling/E&P Companies.

3.0 The Contractor shall provide the following drilling tools (During 1 Rig operation):

A	**Drilling Jars and Accelerators**	**Qty**
1	8" OD Double acting Hydraulic Drilling Jars	2
2	6-1/2" OD Double acting Hydraulic Drilling Jars	2
3	6-1/2" OD Accelerator	2
4	4-3/4" OD Double acting Hydraulic Drilling Jars	2
5	4-3/4" OD Accelerator	2
B	**Hole Openers**	
1	Hole opener - 42" run in tandem with 26" bit with 7-5/8" Reg connections	1 Main + 1 Back up
2	Hole opener - 26" run in tandem with 17-1/2" bit with 7-5/8" Reg connections	1 Main + 1 Back up
3	Hole opener – 17-1/2" run in tandem with 12-1/4" bit with 6-5/8" Reg connections	1 Main + 1 Back up
C	**Under Reamers**	
1	17-1/2" x 20" Under Reamer run in tandem with 17-1/2" bit with 6-5/8" Reg connections	1 Main + 1 Back up
2	14-3/4" x 17-1/2" Under Reamer run in tandem with 14-3/4" bit with 6-5/8" Reg connections	1 Main + 1 Back up
3	12-1/4"x 14-3/4" Under Reamer run in tandem with 12-1/4" bit with 6-5/8" Reg connections	Optional
4	10-5/8" x 12-1/4" Under Reamer run in tandem with 10-5/8" bit with 6-5/8" Reg connections	Optional
D	**Bumper subs**	
1	8-1/4" Bumper sub	2
2	6-1/4" Bumper Sub	2
3	4-3/4" Bumper Sub	2
E	**Stabilisers (all with connections to suit Contractor's drilling tubulars)**	

1	26" NB Stabiliser – spiral welded blade	2
2	26" String Stabiliser – spiral welded blade	2
3	17-1/2" NB Stabiliser - integral blade	2
4	17-3/8" NB Stabiliser - integral blade	2
5	17-1/4" NB Stabiliser - integral blade	2
6	16-3/4" NB Stabiliser - integral blade	2
7	16-1/4" NB Stabiliser - integral blade	2
8	17-1/2" String Stabiliser - integral blade	2
9	17-3/8" String Stabiliser - integral blade	2
10	12-1/4" NB Stabiliser - integral blade	2
11	12" NB Stabiliser - integral blade	2
12	12-1/4" String Stabiliser - integral blade	2
13	12-1/8" String Stabiliser - integral blade	2
14	12" String Stabiliser - integral blade	2
15	11-3/4" String Stabiliser - integral blade	2
16	8-1/2" NB Stabiliser - integral blade	2
17	8-1/4" NB Stabiliser - integral blade	2
18	8-1/2" String Stabiliser - integral blade	2
19	8-3/8" String Stabiliser - integral blade	2
20	8-1/4" String Stabiliser - integral blade	2
21	5-7/8" NB Stabiliser - integral blade	2
22	5-6/8" NB Stabiliser - integral blade	2
23	5-7/8" String Stabiliser - integral blade	2
24	5-6/8" String Stabiliser - integral blade	2
25	5-1/2" String Stabiliser - integral blade	2
F	**Circulating Subs (Contractor to provide x/o to suit rig tubulars)**	
1	8" Circulating sub with 6-5/8" Reg box x pin (double/multiple ball drop type to close and open the sub)	2
2	6-1/2" Circulating sub with 4-1/2" IF box x pin (double/multiple ball drop type to close and open the sub)	2
3	4-3/4" Circulating sub with 3-1/2" IF box x pin (double/multiple ball drop type to close and open the sub)	2

G	**Multiple Activation Circulation Bypass Subs (Contractor to provide x/o to suit rig tubulars)**	
1	Multiple Activation Circulating Bypass (MACB) Tools for 12-1/4" hole size	1 Main + 1 Back up
2	Multiple Activation Circulating Bypass (MACB) Tools for 8-1/2" hole size	1 Main + 1 Back up
3	Multiple Activation Circulating Bypass (MACB) Tools for 5-7/8" hole size	1 Main + 1 Back up
H	**Wellbore Cleanout Tools**	
1	9-5/8" WBCO Tools consisting of a) 9-5/8" Casing Scraper Tool b) 9-5/8" Casing Brush Tool c) 9-5/8" Down hole magnets d) 9-5/8" Downhole Filter Tool e) 9-5/8" Casing Drift Sub	1 set (1 primary+ 1 back up)
2	7" WBCO Tools consisting of a) 7" Casing Scraper Tool b) 7" Casing Brush Tool c) 7" Down hole magnets d) 7" Downhole Filter Tool e) 7" Casing Drift Sub	1 set (1 primary+ 1 back up)
3	4-1/2" WBCO Tools consisting of a) 4-1/2" Casing Scraper Tool b) 4-1/2" Casing Brush Tool c) 4-1/2" Down hole magnets d) 4-1/2" Downhole Filter Tool e) 4-1/2" Casing Drift Sub	1 set (1 primary+ 1 back up)
4	Riser Cleaning Tool	1 set

		(1 primary+ 1 back up)
5	Inflow Test Packer	1 set (1 primary+ 1 back up)
6	Multifunction Circulating Tool (MFCT)	1 set (1 primary+ 1 back up)
I	**Roller Reamers**	
1	3-point Roller Reamer, Near Bit - 12-1/4" (sealed bearing, soft to medium formation)	2
2	3-pointRoller Reamer, String - 12-1/4" (sealed bearing, soft to medium formation)	2
3	3-pointRoller Reamer, Near Bit - 8-1/2" (sealed bearing, medium formation)	1
4	3-pointRoller Reamer, Near Bit - 8-1/2" (sealed bearing, hard formation)	2
5	3-pointRoller Reamer, String - 8-1/2" (sealed bearing, medium formation)	1
6	3-pointRoller Reamer, String - 8-1/2" (sealed bearing, hard formation)	2
7	3-pointRoller Reamer, Near Bit - 5-7/8" (sealed bearing, medium formation)	1
8	3-pointRoller Reamer, Near Bit - 5-7/8" (sealed bearing, hard formation)	2
9	3-pointRoller Reamer, String - 5-7/8" (sealed bearing, medium formation)	1
10	3-pointRoller Reamer, String - 5-7/8" (sealed bearing, hard formation)	2
J	**Box to pin cross over (Contractor to provide x/o to suit rig tubulars)**	

1	2-7/8" EUE 8RD pin x 5-1/2" FH box (drill pipe size and connection details to be provided later)	2
2	2-7/8" EUE 8RD pin x 3-1/2" IF box	2
3	3-1/2" IF pin x 4-1/2" Reg pin	2
4	5-1/2" FH pin box (drill pipe size and connection details to be provided later) x 2" Weco Fig 1502	2
5	3-1/2" IF pin x 2" Weco Fig 1502	2
K	**Drilling Tubulars**	
1	2-7/8" 6.5 lb/ft N80 EUE 8RD tubing (to use as cement stinger)	250m
L	**Tubulars for Well Testing**	
1	4-3/4" Drill Collars (grooved for slips and zip lift) or 3-1/2" HWDP with gas tight premium connection for well testing purposes including necessary lifting subs.	300 m
2	6-1/2" Drill Collars with premium connection for well testing purposes including necessary lifting subs	300 m
3	Cross over sub 4-3/4" DC or 3-1/2" HWDP premium connection box x 4-1/2" test tubing premium connection pin	2
4	Cross over sub 4-3/4" DC or 3-1/2" HWDP premium connection box x 3-1/2" test tubing premium connection pin	2
5	Cross over sub 3-1/2" test tubing premium connection box x 4-3/4" DC or 3-1/2" HWDP premium connection pin	2
6	Cross over sub 4-1/2" test tubing premium connection box x 4-3/4" DC or 3-1/2" HWDP premium Connection pin	2
7	Cross over sub 6-1/2" DC box x 4-1/2" test tubing premium connection pin	2
8	Cross over sub 4-1/2" test tubing premium connection box x 6-1/2" DC pin	2
9	Cross over sub 6-1/2" DC box x 3-1/2" test tubing premium connection pin	2
10	Cross over sub 3-1/2" test tubing premium connection box x 6-1/2" DC pin	2
11	3-1/2" tubing, 12.70 ppf, P-110 or better, premium connection PH-6	2430 m

12	4-1/2" tubing, 26.10 ppf, P-110 or better, premium connection PH-6	4500 m
13	4-1/2" tubing, 15.20 ppf, P-110 or better, premium connection PH-6	1800 m
14	Cross over sub 4-1/2" test tubing premium connection box x 3-1/2" test tubing premium connection pin	2
15	Cross over sub 3-1/2" test tubing premium connection pin x 3-1/2" IF box	2
16	Cross over sub 3-1/2" test tubing premium connection pin x 4-1/2" IF box	2
17	Cross over sub 3-1/2" test tubing premium connection box x 3-1/2" IF pin	2
18	Cross over sub 3-1/2" test tubing premium connection box x 2-7/8" EUE 8RD pin	2
19	Circulating Sub 3-1/2" test tubing Premium pin x 1502, 2" WECO	2
20	Circulating Sub 4-1/2" test tubing Premium pin x 1502, 2" WECO	2
21	Cross over sub 4-1/2" test tubing premium connection box x 3-1/2" IF pin	2
22	Cross over sub 4-1/2" test tubing premium connection box x 2-7/8" EUE 8RD pin	2
23	Cross over sub 4-1/2" test tubing premium connection box x 5.1/2" FH box (connection and size details to be provided later)	1
24	4-3/4" DC premium connection pin x 3-1/2" IF box, or 3-1/2" HWDP premium connection pin x 3-1/2" IF box	2
25	2-7/8" Tubing, 7.9 ppf, P110 or better, premium connection PH-6 (OD of the tubing with coupling shall be meet the drift ID requirement of 4-1/2" x P110 Liner)	1230 m
26	2-3/8" Tubing, 5.5 ppf, P110 or better, premium connection PH-6 (OD of the tubing with coupling shall be meet the drift ID requirement of 4-1/2" x P110 Liner)	1230 m
27	Crossover 2-3/8" (5.5 PPF) Pin x 2-7/8" (7.9 PPF) Box	4
28	Cross over sub 2-7/8" (7.9 PPF) EUE Box x 2-7/8" (7.9 PPF), PH 6 Pin	4

29	Cross over sub 2-7/8" (7.9 PPF) PH 6 Box x 2-7/8" (7.9 PPF) EUE Pin	4
30	Cross over sub 2-3/8" test tubing premium connection box x 2-7/8" test tubing premium connection pin	2
31	Cross over sub 3-1/2" test tubing premium connection box x 2-3/8" test tubing premium connection pin	2
32	Cross over sub 4-1/2" test tubing premium connection box x 2-3/8" test tubing premium connection pin	2
33	Cross over sub 5-1/2" FH box x 2-7/8" test tubing premium pin	2
34	Cross over sub 3-1/2" FH box x 2-7/8" test tubing premium pin	2
35	Cross over sub 5-1/2" FH box x 2-3/8" test tubing premium pin	2
36	Cross over sub 3-1/2" FH box x 2-3/8" test tubing premium pin	2
37	Cross over 2-3/8" EUE PIN to 2-3/8" NUE BOX	2
38	Cross over 2-7/8" EUE PIN to 2-3/8" NUE BOX	2
39	Cross over 2-3/8" NUE BOX to 2-7/8" EUE PIN	2
M	**Containers and Baskets**	
40	Suitable containers and cargo baskets for offshore usage with slings and shackles	1 lot

Note: All the Drilling Rental Tools required for 5-7/8" Hole Size are optional and on Callout Basis.

3.1 The Contractor shall provide the following additional drilling tools during 2 Rig operation:

A	**Under Reamers**	
1	17-1/2" x 20" Under Reamer run in tandem with 17-1/2" bit with 6-5/8" Reg connections	1
2	14-3/4" x 17-1/2" Under Reamer run in tandem with 14-3/4" bit with 6-5/8" Reg connections	1
B	**Multiple Activation Circulation Bypass Subs (Contractor to provide x/o to suit rig tubulars)**	
1	Multiple Activation Circulating Bypass (MACB) Tools for 12-1/4" hole size	1

2	Multiple Activation Circulating Bypass (MACB) Tools for 8-1/2" hole size	1
3	Multiple Activation Circulating Bypass (MACB) Tools for 5-7/8" hole size	1
C	**Wellbore Cleanout Tools**	
1	9-5/8" WBCO Tools consisting of a) 9-5/8" Casing Scraper Tool b) 9-5/8" Casing Brush Tool c) 9-5/8" Down hole magnets d) 9-5/8" Downhole Filter Tool e) 9-5/8" Casing Drift Sub	1
2	7" WBCO Tools consisting of a) 7" Casing Scraper Tool b) 7" Casing Brush Tool c) 7" Down hole magnets d) 7" Downhole Filter Tool e) 7" Casing Drift Sub	1
3	4-1/2" WBCO Tools consisting of a) 4-1/2" Casing Scraper Tool b) 4-1/2" Casing Brush Tool c) 4-1/2" Down hole magnets d) 4-1/2" Downhole Filter Tool e) 4-1/2" Casing Drift Sub	1
4	Riser Cleaning Tool	1
5	Inflow Test Packer	1
6	Multifunction Circulating Tool (MFCT)	1
D	**Containers and Baskets**	
	Suitable containers and cargo baskets for offshore usage with slings and shackles	1 lot

Note: All the Drilling Rental Tools required for 5-7/8" Hole Size are optional and on Callout Basis.

4.0 INSPECTION

Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company as per Clause No. 8.0 of SCC and at any time during the duration of the contract.

5.0 LOGISTICS

The contractor is required to mobilize its equipment, spares, etc to the Shore Base at Kakinada, Andhra Pradesh, India. Company at its discretion may mobilize all or part of the tools and equipment listed in the final contract. All the equipment, spares etc. supplied by the Contractor to the Company under the contract, shall be stored in Contractor's facilities at Kakinada and shall be delivered at Shore Base at Kakinada as per operational requirement and when instructed by the Company.

NOTES:

1. Contractor shall mobilize the hole openers as per operational requirement during the drilling campaign. The tools can be de-hired at any time after completion of work during drilling campaign. No additional payment shall be paid for hole opener spares. Cutter type of Hole Openers shall be suitable for soft to hard formation. If any crossover required, Contractor shall provide at its own cost.
2. OIL envisages the requirement of under-reaming operation during the exploratory campaign to run 16" and 13-3/8"/13-5/8" casings. The tools can be de-hired at any time after completion of work during drilling campaign. The wells are planned as vertical / directional wells. Contractor must keep provision of suitable bull nose, at all times, matching with hole size for under-reaming of pre-drilled deviated hole if so, advised by the operator.
3. **Under-reamer Field Engineer (call-out basis)**: Contractor shall depute One **Under-reamer Field Engineer** for round-the-clock service on rig during the under-reaming/hole opening operation. The Under-reamer/Hole opener Field Engineer shall have at least three years of field experience in operations with Hole openers/Under-reamers.

4. Contractor should provide tools and engineering services to optimize tool selection and performance that comply with Company and industry standards, communicate detailed tool performance results, utilize an approach aligned with continuous improvement and re-design, and provide the necessary support to always facilitate tool selection and mobilization to the rigs during the drilling campaign.

5. Contractor will assist Company's Drilling Engineer in tool and BHA optimization through use of computer simulation and design programs to maximize BHA performance.

6. Contractor shall work closely with the directional drill contractor to ensure that the Under reamer is configured (jetted) to work optimally with flow rates and pressure drops required for DD- MWD-LWD tools.

7. Work to be performed shall include, but is not limited to the provision of:

a. Hole opener and / or under-reamer tools
b. BHA Design Engineering Service.
c. Post-Run Evaluation & Tool Report for well with recommendations for future wells – including but not limited to forensic evaluation of the tool, a full photographic record of the retrieved tool (especially highlighting damaged areas), discussion of forensic observations and how the observations will impact possible tool re-design and how results might be shared not only for the specific project, but other operations as well.

8. Contractor shall provide a list of under-reamer and hole openers and types that will be best suited to drill the proposed hole sections and associated lithologies. Company will select tools on a call-off / consignment basis for each hole section.

9. At the time of tender, the BHA knowledge is limited only to the extent of hole opening. To maintain flexibility, the bidder should nominate Underreamers for a variety of BHA types, including motors, possible rotary steerable and multiple stabilizers.

10. Contractor shall present any depth of cut limiting features associated with the proposed tools and discuss how these aspects will be incorporated into tool design.

11. Contractor is responsible for compliance with any and all required government and Company documentation, permits, and fees for equipment and hazardous (radioactive, explosive, etc.) materials required to perform the Work.

12. All services shall be undertaken using current industry’s best practices and comply with any specifications and recommendations outlined in this document and subsequent attachments hereafter. The activities shall be carried out in accordance with all applicable

laws and Regulations unless dispensation has been authorized in writing to Company to deviate from said laws and regulations.

13. Contractors shall have all drilling units and related equipment designated for the drilling unit, shore-based equipment and personnel prepared such that Company can commence operations whenever it is required.

14. Contractor shall be responsible for becoming fully aware of the relevant aspects of the drilling unit selected and all local operating conditions as it applies to this Scope of Work (SOW).

15. Tools will be supplied with appropriate packaging for transportation offshore (all-weather boxes). Tools shall be supplied with composite thread protector.

16. Contractor will provide any nozzles as part of the price. Nozzle sizes will be determined later, and contractor will have the appropriate nozzle sizes in stock to outfit the Tool with the selected nozzle sizes.

17. All downhole tools must be capable of performing in the following environment:

- Maximum BHST = < 300° F, Maximum BHP = < 10000psi
- CO2 & H2S content is unknown. However, Tools should be H2S compatible.
- 800 - 1500 gpm using LTSOBM /WBM.
- Tools should have rugged body dressed in PDC cutter.
- The Under reamer should be featured with suitable mechanism to ensure that it is activated in downhole when only intended to facilitate operations like shoe track drilling etc. and also allow back reaming.

18. When providing equipment and services contracted from a third party, Contractor shall clearly indicate which items are to be contracted and the name of the third-party Contractor. Such sub-contracting shall only be done with prior approval of OIL.

19. The MACB Tool should have capabilities to pump large size LCM (120-160 ppb) cement gel/Thixotropic Cement through it and in process should isolate the BHA completely. When in bypass mode 100% flow should be through bypass ports and Zero percentage to BHA.

20. The MACB Tool should have capabilities to activate/de-activate multiple times in single R/H (minimum 5 cycles)

21. Standard Multiple Activation Circulating Bypass Tools configuration should be such that it includes at least 05 opening and closing cycles for 8½ '' hole size and for 12¼ or more hole size.

22. The MACB tool for 12-1/4" hole size may also be used for 17-1/2" hole size.

23. Multiple Activation Circulating bypass Tools should allow circulation of drill-fluid with multiple activation for bypass/direct circulation modes in a single trip without any reduction in effective flow area during multiple activation i.e. no reduction in area during bypass/non-bypass mode with any number of activations.

24. Multiple Activation Circulating Bypass Tools should allow for drill string filling in while tripping in the hole and pulling out dry string. MACB should be able to provide option for reverse circulation, if required.

25. Multiple Activation Circulating bypass Tools & Services, ports should be able to close when the pumps are shut down, minimizing a "U" tube effect or possible well control issues that may occur in the well, if any.

26. Multiple Activation Circulating bypass Tools & Services should allow to drill with optimum hydraulics, use of motors, MWDs, LWDs, Core-barrels and maintain the ability to pump aggressive LCM pills (max pill size 120-160 ppb) and cement squeezes.

27. Contractor will provide the standard operation and maintenance manual (in hard copy as well as electronic form) on the rig along with the tool, so as to keep the operating personnel/ OIL representatives updated on its use and practices.

28. Once serviced the MACB Tool shall be able to provide the desired service as specified above, without fail.

29. Contractors shall provide tools in good operating condition and free from defects and shall perform the service with all due care, skill and diligence in accordance with any currently recognized and generally accepted applicable industry practices.

30. **MACB Field Service Engineer (on Call-out basis)**: Contractor to provide MACB Field Service Engineer **(with minimum 3 years, including minimum one year on floater rigs WD more than 500m**) experience with the offered tools on call out basis as and when required during the use of the tools on the rig.

31**. WBCO Field Service Engineer (on Call-out basis)**: Contractor to provide one **WBCO Field Service Engineer (with minimum 3 years, including minimum one year on floater rigs WD more than 500m)** experience with the offered tools on call out basis as and when required during the use of the tools on the rig.

31.1 GENERAL CONDITIONS OF WELLBORE CLEAN OUT EQUIPMENT

30.1.1 The Contractor shall specify the type of connections to be supplied with each component using the well design and trajectory information provided.

30.1.2 For each tool the Contractor should specify the operating parameters, tool specification and any special handling instruction complete with tool schematics.

30.1.3 Contractor will be fully responsible for the equipment provided. The design and construction must be in line with any relevant Industry Standards and recommended practices such as API RP7G.

30.1.4 Contractor shall provide engineering design and technical analysis for the most effective WBCO tool string to clean the wellbore to accept completion best practices.

30.1.5 Contractor shall provide tool descriptions, tool specifications, detailed engineered procedure and detailed running in hole drawing (tool schematic) for the WBCO assembly.

30.1.6 Service tools shall be designed and qualified such that it meets, as a minimum, the applicable Industry (API, ISO, NACE, etc.) standard (if applicable) and / or Industry best practice. In addition, Contractor may be required to demonstrate to OIL that equipment meets or exceeds the technical and functional requirements of the work.

30.1.7 Contractors may be required to demonstrate to OIL's satisfaction qualification of service tool functionality and performance tests and ancillary equipment have been adequately qualified by one or more of the following: Systems-Integration Test, Field Trial, Yard Test or field history.

30.1.8 Contractors shall provide the best quality service tools (from its world-wide fleet) and be able to demonstrate to the OIL's satisfaction the recent performance history of the service tools proposed.

30.1.9 Contractor shall notify OIL of any modifications or damage to equipment.

30.1.10 Unless otherwise agreed, Contractor shall ship WBCO to the rig site in assemblies. OIL shall witness the make-up of all assemblies.

30.1.11 Contractor to demonstrate effectiveness and measure the performance of WBCO fluid chemicals as per latest industry best practices.

30.1.12 WBCO tools shall be conforming to the Well design and risers.

Exhibit 5

5. DIRECTIONAL DRILLING SERVICES

1.0 SCOPE OF WORK

The Scope of Work will include but not be limited to as below:

The wells are planned as vertical exploration wells. The intention is to drill the 17-1/2", 12-1/4", 8-1/2" and 5-7/8" (Contingency) hole sizes mostly using conventional rotary drilling. There is a plan to jet the 36" conductor string, with the 26" hole interval subsequently drilled by releasing the drill-ahead tool. A mud motor will be utilized in the jetting BHA. There is also a contingency requirement for 5-7/8" Hole size services which will be used if operations demand.

The preliminary Standard Directional Plan will be provided to the Bidder by the Company. However, preparation of the detailed directional plan, hydraulics, torque and drag analysis etc. will be the responsibility of the Bidder.

Performance motors will be utilized in the 12-1/4" and 8-1/2" hole interval while LWD will be used during drilling of 12-1/4" and 8-1/2" sections. In these intervals, LWD string will be used (GR, Resistivity, Neutron Density, Formation pressure while drilling (FPWD), Quadrupole sonic, Lookahead Resistivity, Annulus pressure while drilling (APWD) and Temperature).

While the plan is to drill vertical wells, it may be necessary to drill directionally if dictated by geological objectives or hole problems.

Surveying policy will be to either use MWD or drop inclination measuring tools for the 17-1/2" hole interval. MWD surveys will be taken in 12-1/4", 8-1/2" and 5-7/8" hole.

Contractors are requested to keep the above philosophy in mind when preparing their bids.

The scope of work will include, but not be limited to, providing necessary equipment, materials and personnel for the following:

a) To perform LWD formation evaluation services as required to complete the drilling programme with GR, Resistivity, Neutron-Density, Sonic, Formation pressure, Lookahead Resistivity, Temperature and down-hole Annular Pressure as required.
b) To perform all directional drilling planning/BHA selection/torque and drag analysis as required by the Company in order to formulate an efficient, safe and cost-effective drilling programme.
c) To perform all directional drilling operations. This shall include provision of positive displacement motors, MWD survey equipment, including bottom hole temperature measurement and deviation monitoring services, and all personnel required to carry out the service.
d) To plan and perform side track if required on a well.
e) To plan and perform geological side track or drill deviated wells as required.
f) To maintain, monitor and provide status reports of the inventory on a regular basis with the schedule for such reports mutually agreed between the Company and the Contractor prior to the commencement of the operations.
g) To carry out other jobs within the scope of the Contracts as reasonably required by the Company.

2.0 EXPERIENCE:

The Contractor should have minimum five (5) years of experience in providing the Directional Drilling Services (LWD/MWD & Mud Motor) to Drilling/E&P Companies with at least three (03) years in offshore areas.

The Contractor should also have the experience in providing the Directional Drilling Services (LWD/MWD & Mud Motor) to at least 2 deep water Wells (WD ≥ 500 meters) and should have executed at least one contract for Directional Drilling Services (LWD/MWD & Mud Motor) in offshore area in the last 07 years reckoned from original bid closing date.

Downhole Tools should either be new or recently refurbished. In case of refurbished tools, the refurbishment should not be more than 06(six) months old as on the original bid closing date.

3.0 Contractor to Provide

Contractor shall be able to provide all equipment, labour and materials and services specified herein or in the Compensation Schedule. Contractor shall be solely responsible

for the operation of Contractor's Equipment including but not limited to the rigging up, testing, lowering and rigging down thereof.

Contractor is required to provide without limitation, directional programs and recommendations, coordination of the shipment of tools, maintaining an inventory of supplied tools, writing the end of well reports, and writing summaries of any tool failures.

4.0 Approvals

Contractor shall submit to Company for approval prior to the Commencement Date:

a) Preventive maintenance schedule and plan for all Contractors' Equipment.
b) Contractor's safety manual and procedures.

5.0 TECHNICAL PROPOSAL

5.1 Directional, MWD, and LWD Proposal

Based on the well details provided by the Company, the Contractor will be required to submit a proposal prior to spudding each well.

This proposal should include as a minimum:

a) BHA selection and predictions.
b) Directional proposal listing and plots including any anti-collision analysis that may be required.
c) Torque and drag analysis.
d) Recommended drilling parameters for optimal performance of tool.
e) Details of SDMM, MWD and LWD reliability including resolution and accuracy.
f) Detailed specifications for all equipment proposed, including any operational limitations that may be imposed by the possible nature of the proposed wells.
g) Case histories, MBTF records.
h) To provide a schematic of BHA where in the position of the SDMM, LWD/MWD sensors w.r.t. to bit is marked clearly.
i) Data transmission rate for good quality data acceptable to the Company.
j) Maximum dog leg severity that can be handled by the tools proposed both in sliding and rotating mode.
k) Flow rate configuration of the tool offered.

Contractors may be required to present this proposal in a formal fashion at a pre-spud/planning meeting - as required by the Company.

5.2 PERSONNEL

Contractor shall provide as a minimum the following personnel required to perform the Directional Drilling, MWD and LWD services effectively and efficiently as required by this Contract. Said personnel shall be allocated to the Work, shall be continuously available as and when required from the Commencement Date onward, and any proposed change in personnel shall be approved by Company in advance by submission of CV.

5.3 Supervision (at Contractor's cost)

Contractor shall provide one Base Coordinator. The base coordinator shall be a qualified, skilled and experienced Directional drilling/MWD/LWD coordinator. He should have a minimum of 3 years of experience as a Base Coordinator in similar job. The Contractor to have an additional expert coordinator exclusively for LWD equipment and services at their base for interpretation of data and providing to OIL.

The Base Coordinator will be primarily based in Kakinada or such other location as Company at its sole option may agree and be available for consultation at all times throughout the duration of the contract. Contractor will provide detailed resumes for the proposed coordinators and their alternates, which Contractor may wish to use in case the primary coordinator becomes unavailable.

The coordinators as a minimum are to:

a) Ensure that quality control is effectively implemented and maintained throughout the operations from the preparation of the equipment prior to load out, during operations and in all post operational activity.
b) Ensure all equipment is maintained, checked and calibrated in a timely manner prior to load out.
c) Ensure that sufficient backup tools and equipment are on site to safeguard uninterrupted rig operations.
d) Co-ordinate with the Company Drilling Manager on mobilization and de-mobilization of specialists, to and from the well site, to minimize personnel charges whilst ensuring smooth continuity of operations.

e) Provide liaison between Contractor and Company personnel in India and offer the best possible advice to prevent problems, and solve problems encountered.
f) Provide effective communications on a daily basis prior to load out and during operations.
g) Ensure that safety training and policies are in place and adhered to and co-ordinated with Company's safety policy.
h) Provide documentation demonstrating a Comprehensive Health, Safety and Environmental Management System and its performance record over the previous three years that accords with internationally accepted HSE reporting standards including LTIs, MTIs and restricted work cases.
i) Make regular visits to the rig-sites to ensure above.
j) Attend a monthly meeting with the Company to present invoices, sort out problems that may have arisen and liaise with Company concerning future activity.
k) to attend all pre-spud and pre-job meetings

In addition, the directional coordinator will be responsible for, without limitation, directional planning and design and other related services like logistics of equipment and personnel related to the Work, administration of the Contractor's Day to day affairs under the Contract and shall be available for consultation at all times for the duration of the Contract.

5.4 Contractor's Directional Drillers and MWD/LWD Engineers on the Drilling Unit

Contractors will be required to provide the following personnel:

a) Qualified, skilled and experienced Directional Drillers (Contractor may propose both Expatriates and Nationals) assigned for the Company's operation.
b) Qualified, skilled and experienced MWD/LWD Engineer's assigned to the Company's operation (Contractor may propose both Expatriates and Nationals).
c) The proposed MWD engineer shall be capable of handling the LWD equipment. If the proposed MWD Engineer is not capable of handling the LWD equipment, then the Contractor shall clearly mention this and indicate the LWD engineer's requirement exclusively. The costs in this case to be additionally included in the Day rate of the MWD Engineer.

d) Offshore personnel will work on a 28/28-day rotation as a maximum or as per operational requirements. It is intended to multi-task personnel (where possible) for the directional drilling, MWD and LWD services.

e) The contractor shall submit CVs of the above personnel to the company within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for-Company's approval. The Contractor shall not deploy its personnel unless cleared by the Company.

f) The expatriate personnel of the Contractor should require all the statutory clearances to work in the field. It is the Contractor's responsibility that the clearance is obtained for every position.

5.5 Experience and Training

Minimum experience required for the Directional Drilling Engineer and the lead MWD/LWD Engineer is minimum 5 years of relevant experience and 7 years of drilling industry experience. Company at its option may mobilize a second MWD/LWD Engineer for directional wells. The second MWD/LWD Engineer should have minimum 3 years relevant experience and 6 years of drilling industry experience.

All contractor personnel should have undertaken theoretical contractor courses as appropriate to their position.

The contractor shall submit CVs of the above personnel to the company within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for-Company's approval. The Contractor shall not deploy its personnel unless cleared by the Company.

6.0 REPORTING

6.1 General

Contractors will be required to adhere to the following reporting requirements while on rig:

a) To provide a Daily Report in a format acceptable to Company or a format provided by Company. This report should detail, as a minimum.

1. BHA and drilling assembly used.

2. BHA and drilling assembly performance.
3. BHA Hours (circulating, in hole and on bottom).
4. In case of directional wells or if required, separate sliding and rotating hours
5. Torque and drag presentation.
6. Survey Data (including QA/QC data).
7. Full LWD logs and summary sheets as and when requested by Company's representative (on the wellsite or at the base).
8. Estimated Daily Cost for performed services.

b) Directional supervisor should measure and calliper all his tools (subs, stabilizers, non-magnetic drill collars, survey tools) upon arrival at the rig, and also prior to running it in the hole. The Supervisor shall ensure that the tools are available for the forthcoming jobs and inform Company Representative on Board in time in case of shortage or wrong equipment etc.

c) A monthly report shall be submitted to the Company by the Contractor that summarizes all the activities that were carried out during the month, personnel and equipment movements and equipment failures and the costs for the personnel and services rendered.

d) A fault report that explains in detail all the equipment failures and actions taken to prevent repetition with recommendations for the future operations shall be submitted after every event.

6.2 Tools & Equipment Inventory

Contractor shall maintain an up-to-date inventory of all tools and equipment held on the Drilling Unit, Shore Base, work boats or elsewhere. This report shall be submitted on a weekly basis to the Company Representative. Contractor is responsible for ensure that tools are picked up, made-up, and laid down according to Contractor's guidelines.

6.3 End of Well Report

Contractor shall provide the following end of well reports within 14 days of the end of operations on each well.

1. A detailed recap of the drilling operations that utilized motors, MWD, or LWD at the end of each well.
2. A detailed recap for all directional sections including final definitive survey.

3. An evaluation of any directional work or BHA tendencies.
4. A detailed cost breakdown by section.
5. Schematic and description of each BHA used
6. An equipment performance review
7. A planned vs. Actual well profile
8. All LWD logs and prints (including digital information where appropriate)
9. A detailed discussion on equipment failures or downtime.
10. Necessary changes to be incorporated for the next well program based on the lessons learned from the previous wells
11. Contractor shall prepare a detailed report at the end of the drilling campaign to capture the problems encountered and propose recommendations and mitigation methods for future operations.

6.4 Sample Reports

Contractor's outline example reports of those reports listed above are to be submitted along with the bid.

6.5 Data Reporting for Formation Evaluation

1. Depth of all logs and other data will be recorded in meters.
2. Paper copies of each log; quantities and scales to be defined prior to drilling.
3. Electronic log data should be presented in external hard disk containing graphical log data in PDF or equivalent format (capable of running in Windows 10 operating system) and digital log data in ASCII / LAS / LIS / DLIS format.
4. Data Reporting During Logging.
5. Fully updated LWD logs in paper and digital format should be handed to the Well site Geologist / Company's representative for distribution to the Company's office in time for the 09:00 hrs morning report.
6. An evening report (time to be agreed with the Company's representative) shall be required with updated LWD Logs and digital data (if requested). This will be presented to the Company's Well site Geologist / Company's representative for the afternoon report to the Company's Operations Geologist.
7. LWD logs containing all memory data for the entire hole section/well in paper and digital format should be handed to the Well site Geologist / Company's representative as soon as possible after downloading of memory data.

6.6 Post-processing of field data

Post processing of field data at the well site or contractors' base office will consist of:

a) Special processing of data for Resistivity, Lookahead Resistivity and Neutron-Density Deliverables for 12-1/4" and 8-1/2" hole sections:

- 1D Inversion Model
- Distance to Bed Boundary
- Average Resistivity Image
- Azimuthal density from four quadrant and images
- Ultra Sonic/ Density derived Caliper Log

b) Post job evaluation

c) Contractors to perform a detailed post job evaluation after each operation and to submit to the Company representative within 24 hours.

7.0 EQUIPMENT

7.1 Minimum Requirements

a) All equipment (including surface equipment) required to perform directional drilling and surveying services in the quantities, sizes and specifications as listed in the table later in this document. The list is intended to be for guidance only, and Contractors may add or delete tools which they feel are required for the operations but not included in the scope according to their specialized knowledge. It would be appreciated if the reason for addition or deletion of the tools is also provided by the Contractors.

b) Contractors will be required to provide fishing tools for any 'non-standard' down hole equipment. A list of available and recommended fishing equipment will be provided (Exhibit – 12).

c) Contractor will provide necessary lift subs for their equipment.

d) Contractors will be required to minimize the use of drill string crossovers but will be required to supply these if down hole equipment is not of the specification laid out in the attached schedule.

e) Contractors will be required to supply stocks of equipment consumables and accessories commensurate with a remote area operation.

f) All equipment (including surface equipment) required to perform MWD and LWD services (to include but not be limited to: GR, Resistivity, Lookahead Resistivity, Neutron-Density, Sonic, Formation pressure, Temperature, and down-hole Annular Pressure) in the quantities, sizes and specifications as specified under the Scope of Work.

g) The Company at its discretion can order the equipment and tools in part or in full as per this Scope of Work. The Company at its discretion can also reduce or increase the quantity of equipment and tools to be ordered.

h) Contractor shall provide a list of all necessary tools and spares that it intends to mobilize for successful completion of the Contract.

i) Contractors shall provide the location of their base facilities available in India with details for maintenance and servicing of the proposed tools.

j) All tool specifications provided represent operational ranges and may vary depending on formation conditions, drilling parameters, and tool configuration.

k) Adequate backup tools and contingency plans shall be maintained to ensure uninterrupted operations in case of tool failure or loss in hole.

7.2 Separate equipment list as follows:

a) Contractor's recommended full suite of LWD package including personnel.

7.3 Steerable Down Hole Mud Motor (SDMM)

1. Contractor to provide stabilized positive displacement steerable down hole mud motors, and other equipment along with services of the Company as detailed below on rental basis for drilling 26", 17-1/2", 12-1/4" and 8-1/2" hole. The tools for 26" hole would be used for jetting the 36" conductor and then drilling the 26" hole interval.

2. The smaller tools would be used for drilling vertical/directional wells. Contractor should have necessary standby and back up tools for the set to meet situations like tool failure/ loss of equipment down hole for uninterrupted operation.

3. Mud Motor should have rotor catching device that secures the lower parts of the motor in case of a twist off or back off.

4. Motor configurations (speed vs torque) shall be selected based on hole size, formation characteristics, and directional requirements to ensure optimal drilling performance. Mud Motor required will be mainly High Torque.

5. All tool specifications provided represent operational ranges and may vary depending on formation conditions, drilling parameters, and tool configuration.

a) 17-1/2" to 26" Hole size

1. 9-5/8" / 9-1/2" OD High torque, medium speed, stabilized positive displacement multi-lobe mud motor for 26" hole size with 7 5/8" API Regular Box down (bit box) and 6 5/8" API Regular Box Up assembly complete with lifting sub and having following specifications.

- Flow rate : 600-1200 GPM or better.
- RPM : 50-160 or more.
- Operating differential pressure : 450-800 PSI or more.
- Operating torque : 13,000-19,000 NM or more.
- Power output : 275-400 HP or more.

2. For 17-1/2" Holes SDMM should be rated to operate in temperatures of 150 °C or more and pressures of 18,000 psi or more.

3. Contractor to confirm that their motors will be able to provide 4°/30 M or more build up rate (with 17-3/8" SDMM stabilizer sleeve and 17" string stabilizer) and will be able to rotate where BUR of 4°/30 m is obtained.

4. Motors can be used for jetting programme for 36" / 26" hole sections on surface / conductor casing in Deepwater wells. Contractor should be equipped appropriate accessories and suitable stabilizers and sleeves for the same as required for jetting.

b) 12-1/4" Hole size

1. 7-7/8" or 8" or 8-1/4" OD high torque, low to medium speed stabilized positive displacement steerable multi-lobe mud motor capable of drilling vertical and deviated wells to be used for drilling in 12-1/4" hole with bearing housing stabilizer and adjustable kick off sub (Adjustable Bend Housing) with 6-5/8" API Regular Box down (bit box) and 6-5/8" API Regular Box up, complete with lifting sub and having following specifications.

- Flow rate : 400-900 GPM or better.
- RPM : 45-195 or more.
- Operating differential pressure : 450-650 PSI or more.
- Operating torque : 10,000-20,000 NM or more.

- Power output : 175-425 HP or more.

2. For 12-1/4" Holes SDMM should be rated to operate in temperatures of 150 °C or more and pressures of 18,000 psi or more.

3. Contractor to confirm that their motors will be able to provide 5.5°/30 M or more build up rate (with 12 1/8" SDMM stabilizer sleeve and 11 3/4" string stabilizer) and will be able to rotate where BUR of 5.5°/30 m is obtained.

c) 8-1/2" Hole size

1. 6-1/2" / 6-3/4" OD high torque, low to medium speed stabilized positive displacement steerable multi-lobe mud motor capable of drilling vertical and deviated wells to be used for drilling in 8 1/2" hole with bearing housing stabilizer and adjustable kick off sub with 4-1/2" API regular box down (bit box) and 4-1/2" API IF Box up, complete with lifting sub and having following specifications.

- Flow rate : 300-700 GPM or better.
- RPM : 50-175 or more.
- Operating differential pressure : 600-900 PSI or more.
- Operating torque : 6,500-15,000 NM or more.
- Power output : 145-300 HP or more.

2. For 8-1/2" Holes SDMM should be rated to operate in temperature of 150 °C or more and pressures of 18,000 psi or more.

3. Contractor to confirm that their motors will be able to provide 6°/30 M or more to build up rate (with 8 3/8" SDMM stabilizer sleeve and 8" string stabilizer) and will be able to rotate where BUR of 6°/30 m is obtained.

7.4 Collar based MWD tools specifications

(for 26", 17-1/2", 12-1/4" and 8-1/2" Hole Size)

1. Measurement while drilling electronic package consisting of hole inclination, direction and gamma ray measurement, with API quality continuous Gamma Ray measurement in real time, directional survey response in less than 120 seconds.

2. The system to complete with pulser, electronic sensors, power source etc. for transmitting down-hole data in real time with tool face update every 20 second or less.
3. Data transmission rate 5 bits/sec. or more and should be suitable to transmit data of various tools quoted in different segments of the tender.
4. MWD should be able to drill float collar, shoe track, cement and casing shoe to drill the formation.
5. System will be capable of being used in oil base, water base mud or any type of mud system.
6. The distance from bit for directional measurement should not be more than 19.0 mtrs or less.
7. Data transmission should be in Real time and stored in Memory mode.
8. The MWD/LWD system shall include integrated tri-axial vibration monitoring sensors to measure axial, lateral, and torsional vibrations. The tool shall provide real-time data on drilling dynamics such as shock, stick-slip, and whirl, with provision for surface display and analysis to support drilling optimization and tool protection.
9. LCM pumping capability of 40 ppb or more (maximum as per tool specification) of medium to fine nut.
10. Gamma ray, inclination and azimuth measurements.
11. Measurement accuracy : TF+/- 3.0 deg, AZ +/- 1.5 deg, INC +/- 0.2 deg
12. MTF/GTF switch : Programmable at surface.
13. Temperature Rating : 150 0C or more
14. Pressure Rating : 18,000 psi or more.

a) 17-1/2" to 26" Hole size

1. Collar Size : 9-1/2" or 9-5/8"
2. Flow rate : 600-1200 GPM or better.
3. Max Tool Curvature : 3°/30m or more

b) 12-1/4" Hole size

1. Collar Size : 7-7/8" or 8" or 8-1/4"
2. Flow rate : 450-900 GPM or better.
3. Max Tool Curvature : 5°/30m or more
4. Combinable with all quoted LWD tools for 12-1/4" hole.

c) 8-1/2" Hole size

1. Collar Size : 6-1/2" or 6-3/4"
2. Flow rate : 250-700 GPM or better.
3. Max Tool Curvature : 7°/30m or more
4. Combinable with all quoted LWD tools for 8-1/2" hole.

7.5 LWD SPECIFICATIONS

7.5.1 12-1/4" hole

a) Gamma Ray (Natural)

1. API quality of continuous Gamma Ray in real time; 0 to 250 API or more.

b) High Resolution Standard Array Induction Service (Resistivity)

1. Collar Size : 7-7/8" or 8" or 8-1/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : > 450-900 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Tool should be able to record resistivity in multiple frequencies (minimum 2 frequencies).
6. Bore-hole compensated phase & attenuation measurement systems with multiple depths of investigation (minimum 5).
7. Resistivity measurement range: 0.2 to 2,000 Ohm-m.
8. Invasion Profile from curve separations.

c) Azimuthal Density with Imaging and Neutron Porosity

1. Collar Size : 7-7/8" or 8" or 8-1/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : > 450-900 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Azimuthal Density Range :1.8 to 2.8 gm/cc or 1.6 to 2.6 g/cc
6. Pe :1 to 10 units
7. Neutron porosity : -6 to 54 P.U. or 0 to 60 P.U.

8. Azimuthal density from four quadrants and images are to be provided as per the operational requirement with 16 BINS measurement and real time transmission at a rate of 4 BINS / 4 Sectors or more.
9. Standoff binned density / Image Derived Density based on the sector with which the tool is in contact with the formation while drilling is to be provided as a processed recorded mode output.
10. Ultra Sonic / Density derived Caliper Log to be provided.

d) **Sonic**

1. Collar Size : 7-7/8" or 8" or 8-1/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : > 450-900 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Sonic derived Calliper Log to be provided.
6. Tool should be capable of quadruple excitation mode to deliver real-time delta-T compressional, shear slowness and interval transit time.

e) Formation Pressure while Drilling

1. Collar Size : 7-7/8" or 8" or 8-1/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : > 450-900 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Formation Pressure while drilling tool shall be capable making probe-based formation pressure and mobility measurements.
6. System should be able to drill float collar, shoe track, cement and casing shoe to drill the formation. System will be capable of being used in oil base, water base mud or any type of mud system.
7. Tools should be MWD turbine powered / Battery powered. Tools shall be able to provide tool status and battery status in RT.

f) **Annular Pressure and Annular Circulating Temperature While Drilling**

1. Pressure sensor to identify ECD (Equivalent Circulating Density) and ESD (Equivalent Static Density).

2. APWD pressure and temperature resolution should be 1 psi or less and 1^0C or less respectively.
3. APWD pressure range 0-10,000 psi and temperature range should be 150 ^{0}C or more.
4. Should be able to provide measurements in both OFF and ON conditions of the pumps.
5. Should be able to take multiple pressure measurements during LOT.
6. Should be able to measure internal and external string pressure and temperature.
7. APWD should be Combinable or integrated part of MWD & Induction Resistivity tools. If separate combinable tool, then rate is to be included along with the LWD tools as per the Schedule of Rates. APWD data to be provided at no additional cost to the Company.

g) **Temperature log**

1. Temperature Rating : 150 ^{0}C or more.
2. Temperature resolution should be 1^0 C or better respectively.

7.5.2 8-1/2" Hole section

a) Gamma Ray (Natural)

1. API quality of continuous Gamma Ray in real time; 0 to 250 API or more.

b) High Resolution Standard Array Induction Service (Resistivity)

1. Collar Size : 6-1/2" or 6-3/4"
2. Temperature Rating : 150 ^{0}C or more
3. Maximum Flow Rate : >250-700 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Tool should be able to record resistivity in multiple frequencies (minimum 2 frequencies).
6. Bore-hole compensated phase & attenuation measurement systems with multiple depths of investigation (minimum 5).
7. Resistivity measurement range : 0.2 to 2,000 Ohm-m.
8. Invasion Profile from curve separations.

c) Azimuthal Density with Imaging and Neutron Porosity

1. Collar Size : 6-1/2” or 6-3/4"
2. Temperature Rating : 150 ^{0}C or more
3. Maximum Flow Rate : >250-700 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Azimuthal Density Range :1.8 to 2.8 gm/cc or 1.6 to 2.6 g/cc
6. Pe :1 to 10 units
7. Neutron porosity : -6 to 54 P.U. or 0 to 60 P.U.
8. Azimuthal density from four quadrants and images are to be provided as per the operational requirement with 16 BINS measurement and real time transmission at a rate of 4 BINS / 4 Sectors or more.
9. Standoff binned density / Image Derived Density based on the sector with which the tool is in contact with the formation while drilling is to be provided as a processed recorded mode output.
10. Ultra Sonic / Density derived Caliper Log to be provided.

d) Sonic

1. Collar Size : 6-1/2” or 6-3/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : >250-700 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Sonic derived Calliper Log to be provided.
6. Tool should be capable of quadruple excitation mode to deliver real-time delta-T compressional, shear slowness and interval transit time.

e) Formation Pressure while Drilling

1. Collar Size : 6-1/2” or 6-3/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : >250-700 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Formation Pressure while drilling tool shall be capable making probe-based formation pressure and mobility measurements.
6. System should be able to drill float collar, shoe track, cement and casing shoe to drill the formation. System will be capable of being used in oil base, water base mud or any type of mud system.

7. Tools should be MWD turbine powered / Battery powered. Tools shall be able to provide tool status and battery status in RT.

f) Annular Pressure and Annular Circulating Temperature While Drilling

1. Pressure sensor to identify ECD (Equivalent Circulating Density) and ESD (Equivalent Static Density).
2. APWD pressure and temperature resolution should be 1 psi or less and 1 ^{0}C or less respectively.
3. APWD pressure range 0-10,000 psi and temperature range should be 150 ^{0}C or more.
4. Should be able to provide measurements in both OFF and ON conditions of the pumps.
5. Should be able to take multiple pressure measurements during LOT.
6. Should be able to measure internal and external string pressure and temperature.
7. APWD should be Combinable or integrated part of MWD & Induction Resistivity tools. If separate combinable tool, then rate is to be included along with the LWD tools as per the Schedule of Rates. APWD data to be provided at no additional cost to the COMPANY.

g) Temperature log

1. Temperature Rating : 150 ^{0}C or more.
2. Temperature resolution should be 1 ^{0}C or better respectively.

7.6 Call Out Tool Specifications

7.6.1. (12-1/4" Hole Size)

LWD SPECIFICATIONS

a) Lookahead resistivity for 12-1/4" hole size – Call Out

1. Collar Size : 7-7/8" or 8" or 8-1/4"
2. Temperature Rating : 150 ^{0}C or more.
3. Maximum Flow Rate : > 450-900 GPM or better.
4. Pressure Rating : 18,000 psi or more.

5. Tool should provide resistivity changes of min. 30 mtrs ahead of tool in low angle wells.
6. Tool collar should be compatible with 12-1/4" BHA string
7. Should be able to visualize upcoming formation tops.
8. Should be capable to measure anisotropy (Rv, Rh) and relative dip at any hole angle
9. Should be compatible with SDMM BHA and with other LWD sensors

7.6.2. (8-1/2" Hole Size)

LWD SPECIFICATIONS (8-1/2" Hole Size)

a) Lookahead resistivity for 8-1/2" hole size – Call Out

1. Collar Size : 6-1/2" or 6-3/4"
2. Temperature Rating : 150 ^{0}C or more
3. Maximum Flow Rate : >250-700 GPM or better.
4. Pressure Rating : 18,000 psi or more.
5. Tool should provide resistivity changes of min. 30 mtrs ahead of tool in low angle wells.
6. Tool collar should be compatible with 8-1/2" BHA string
7. Should be able to visualize upcoming formation tops.
8. Should be capable to measure anisotropy (Rv, Rh) and relative dip at any hole angle
9. Should be compatible with SDMM BHA and with other LWD sensors

7.6.3 (5-7/8" Hole Size) – Contingency Section

Collar based MWD tools specifications

1. Measurement while drilling electronic package consisting of hole inclination, direction and gamma ray measurement, with API quality continuous Gamma Ray measurement in real time, directional survey response in less than 120 seconds.
2. The system to complete with pulser, electronic sensors, power source etc. for transmitting down-hole data in real time with tool face update every 20 second or less.
3. Data transmission rate 5 bits/sec. or more and should be suitable to transmit data of various tools quoted in different segments of the tender.

4. MWD should be able to drill float collar, shoe track, cement and casing shoe to drill the formation.
5. System will be capable of being used in oil base, water base mud or any type of mud system.
6. The distance from bit for directional measurement should not be more than 15.0 mtrs or less.
7. Data transmission should be in Real time and stored in Memory mode.
8. LCM pumping capability of 40 ppb or more (maximum as per tool specification) of medium to fine nut.
9. Gamma ray, inclination and azimuth measurements.
10. Measurement accuracy : TF+/- 3.0 deg, AZ +/- 1.5 deg, INC +/- 0.2 deg
11. MTF/GTF switch : Programmable at surface.
12. Temperature Rating : 150 ^{0}C or more
13. Pressure Rating : 18,000 psi or more.
14. Collar Size : 4-1/2" or 4-3/4"
15. Flow rate : 250-350 GPM or better.
16. Max Tool Curvature : 8°/30m or more

LWD SPECIFICATIONS

a) Gamma Ray (Natural)

1. API quality of continuous Gamma Ray in real time; 0 to 250 API or more.

b) High Resolution Standard Array Induction Service (Resistivity)

1. Collar Size : 4-1/2" or 4-3/4"
2. Flow rate : 200-350 GPM or better.
3. Temperature Rating : 150 ^{0}C or more.
4. Pressure Rating : 18,000 psi or more.
5. Tool should be able to record resistivity in multiple frequencies (minimum 2 frequencies).
6. Bore-hole compensated phase & attenuation measurement systems with multiple depths of investigation (minimum 5).
7. Resistivity measurement range: 0.2 to 2,000 Ohm-m.
8. Invasion Profile from curve separations.

c) Annular Pressure and Annular Circulating Temperature While Drilling

1. Pressure sensor to identify ECD (Equivalent Circulating Density) and ESD (Equivalent Static Density).
2. APWD pressure and temperature resolution should be 1 psi or less and 1^0C or less respectively.
3. APWD pressure range 0-10,000 psi and temperature range should be 150 ^{0}C or more.
4. Should be able to provide measurements in both OFF and ON conditions of the pumps.
5. Should be able to take multiple pressure measurements during LOT.
6. Should be able to measure internal and external string pressure and temperature.
7. APWD should be Combinable or integrated part of MWD & Induction Resistivity tools. If separate combinable tool, then rate is to be included along with the LWD tools as per the Schedule of Rates. APWD data to be provided at no additional cost to the COMPANY.

d) Temperature log

1. Temperature Rating : 150 ^{0}C or more.
2. Temperature resolution should be 1^0 C or better respectively.

Steerable Down Hole Mud Motor (SDMM)

1. Contractor to provide stabilized positive displacement steerable down hole mud motors, and other equipment along with services of the Company as detailed below on rental basis for drilling 5-7/8" hole.
2. The smaller tools would be used for drilling vertical/directional wells. Contractor should have necessary standby and back up tools for the set to meet situations like tool failure/ loss of equipment down hole for uninterrupted operation.
3. Mud Motor should have rotor catching device that secures the lower parts of the motor in case of a twist off or back off.
4. Motor configurations (speed vs torque) shall be selected based on hole size, formation characteristics, and directional requirements to ensure optimal drilling performance. Mud Motor required will be mainly High Torque.

5. All tool specifications provided represent operational ranges and may vary depending on formation conditions, drilling parameters, and tool configuration.
6. 4-1/2" / 4-3/4" OD high torque, low to medium speed stabilized positive displacement steerable multi-lobe mud motor capable of drilling vertical and deviated wells to be used for drilling in 5-7/8" hole with bearing housing stabilizer and adjustable kick off sub with 3-1/2" API Reg box down (bit box) and 3-1/2" API IF Box up, complete with lifting sub and having following specifications.

    - Flow rate : 150-300 GPM or better.
    - RPM : 60-250 or more.
    - Operating differential pressure : 700-1300 PSI or more.
    - Operating torque : 1900-2700 NM or more.
    - Power output : 90-140 HP or more.

7. For 5-7/8" Hole SDMM should be rated to operate in temperature of 150 °C or more and pressures of 18,000 psi or more.
8. Contractor to confirm that their motors will be able to provide 7°/30 M or more to build up rate (with 5-7/8" SDMM stabilizer sleeve and 5-1/2" string stabilizer) and will be able to rotate where BUR of 7°/30 m is obtained.

7.7 MWD/ LWD Unit

Skid-Mounted pressurized MWD/LWD surface unit with all necessary computers, monitors, printers, equipment and spares for the logs listed above. It should include all slings which are certified and pad eyes for lifting of the Unit. Contractor will be responsible to provide fire /explosion proof monitors (as per API standards and suitable for rig floor installation) which are required to be rigged up at drillers panel for taking survey and performing deviation work. These should be connected to the MWD / LWD units as required and Contractor shall be responsible to provide enough length of cables for same. Contractor shall also provide the requisite monitor for Company's Well Site Geologist, Company-Man, Drilling Supervisor etc.

7.8 Additional Equipment

Any other equipment that not mentioned in the scope and is felt required for smooth functioning of the work by the Contractors should be mentioned as "Additional Items".

7.9 Maintenance

Upon request by Company, Contractor shall provide proof of maintenance and service history of all items of equipment supplied.

Contractor shall maintain adequate stocks of consumables and accessories to manage the operation of the Work in a remote location.

Contractors shall maintain all equipment in a fit for purpose condition and shall supply all relevant certification including, but not limited to calibration certificates, inspection certificates, magnetization certificates, as required.

a) Drill string tubular should conform to specifications laid down in DS-1 Category 4 standards.
b) No directional tools shall be accepted at Shore Base unless accompanied by latest 3rd party inspection reports.

Contractor shall replace or repair whole or part of an item at his cost which shows injurious defects on tests and inspections after delivery at base.

7.10 Equipment to be Operational

Contractor shall always maintain all equipment in operating condition to prevent downtime or waiting on equipment time. Contractor shall be responsible to provide all relevant certification for all tools and equipment.

8.0 Inspection

Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company as per Clause No: 8.0 of SCC and at any time during the duration of the contract.

Note:

The Contractor shall provide sufficient back up tools on rig to meet the workload and for situations such as tool failure/lost in hole etc and ensure uninterrupted operations (Minimum 01 in use + 01 back-up, except surface unit for MWD/LWD).

a) All crossover subs required from Company's drill string to Contractor's part of drill string or any other special crossover etc would be identified and furnished by the contractor.

b) Contractor shall ensure that the equipment is delivered and maintained in a fit condition for the intended work and shall, at its cost and expense, man, operate, replace, supply, repair and maintain the equipment as per the contract.

c) The Steerable Downhole Mud Motor (SDMM) and all other tools (subs, stabilizers, cross overs, etc) should be measured and callipered upon arrival at the rig, and prior to running it in the hole.

d) Contractor shall provide suitable stabilizers for the drill string if required for drilling vertical/directional wells with SDMM during the period of the contract.

e) Placement of stabilizers at different positions in the rotary assemblies should not be a constraint while running with the LWD tool.

f) The tools should have provision to pump LCM material in case of any mud loss in the course of drilling (at least 40 ppb of fine to medium nut plug).

9.0 REAL TIME DATA TRANSMISSION

Contractor will provide details of its real time data transmission capability to the Company. This should include capability of integrating data from third party (viz. Mud logging). Also details about Contractor's capability to provide data to third party (viz. Mud logging) in WITSML or similar standard format on real time and/or batch mode basis is required. Company's third-party Contractor shall provide communications facilities between the Drilling Unit and the Company's Base Office at Kakinada.

The Contractor shall monitor drilling dynamics including vibration to optimize drilling performance and prevent tool failure.

10.0 LOGISTICS

10.1 Shore Base

Company's main point of Shore base shall be Kakinada, Andhra Pradesh, India.

The bidder is required to mobilize all its equipment, spares etc to the Shore Base at Kakinada, Andhra Pradesh, India. All the equipment and spares etc. supplied by Bidder to the Company under the contract shall be stored in Bidder's facilities at Kakinada and shall be delivered at Shore Base at Kakinada as per operational requirement and when instructed by the Company.

The Bidder is required to maintain adequate equipment / spares and supply as required.

All materials, supplies, tools and equipment are required to be labelled and packaged or containerized in a pre-slung condition (including lifting lugs, etc.).

10.2 MWD / LWD Unit

Company shall instruct the Contractor to mobilize or demobilize the unit as per contract to the Shore Base. Installation of the unit on the Drilling Rig is Contractor responsibility.

10.3 Spares

a) The Contractor shall maintain adequate equipment/spares at its facilities at Kakinada, Andhra Pradesh, India.
b) Contractor shall also provide, at its cost, any items of equipment, spare parts, supplies and materials which are not specifically detailed in the contract but are required for normal operations according to good oilfield practice and are related to items already furnished by the contractor and/or are normally Contractor supplied.
c) All materials, supplies, tools and equipment are required to be labelled and packaged or containerized in a pre-slung condition (including lifting lugs, etc.)

10.4 Load Testing

All lifting and load bearing equipment of the Contractor shall be certified prior to use, and all relevant certifications shall be available for inspection. All toolboxes and containers must be sent with certified slings, and a copy of the certification should be sent with the equipment. The slings should be clearly identifiable as belonging to the Contractor. Periodical testing of all the lifting equipment shall be responsibility of the Contractor.

11.0 TECHNICAL SUPPORT

11.1 Logistical Support

Contractor will arrange appropriate logistics for the supply of all the consumable items required for the equipment supplied to carry out the Scope of Work.

11.2 New Developments

Contractor shall make available to Company in as much as it is not constrained by agreements of confidentiality, details of any ongoing research and development activities that it is undertaking, and which may be relevant to the Company's operation.

12.0 EQUIPMENT REQUIRED DURING ONE RIG OPERATIONS

Table 1: Drilling Motor and MWD tools

Sl. No.	Description	Bidders Specifications	Quantity
1	9-5/8" or 9-1/2" SDMM motor w/ adjustable bent housing, 7-5/8" Reg B x B conn, with required sleeve stabilisers (2 under gauge, 1 slick sleeve/blank sleeve) for 17-1/2" and 26" hole each.		2
2	7-7/8" or 8" or 8-1/4" OD SDMM motor w/ adjustable bent housing, 6-5/8" Reg B x B conn, with required sleeve stabilizers (2 under gauge, 1 full gauge, 1 slick sleeve/blank sleeve) for 12-1/4" hole.		2
3	6-1/2" or 6-3/4" SDMM motor w/ adjustable bent housing, 4-1/2" Reg Bottom x 4-1/2" IF top conn with required sleeve stabilisers (2 under gauge, 1 full gauge, 1 slick sleeve/Blank Sleeve) for 8-1/2" hole.		2
4	9-5/8" or 9-1/2" Basic MWD tool with all necessary spares for deviation monitoring and control.		2

5	7-7/8" or 8" or 8 1/4" Basic MWD tool with all necessary spares for deviation monitoring and control.		2
6	6-1/2" or 6-3/4" Basic MWD tool with all necessary spares for deviation monitoring and control.		2
7	9-5/8" or 9-1/2" MWD collars with 7 5/8" Reg connections.		2
9	7-7/8" or 8" or 8-1/4" MWD collars with 6-5/8" Reg connections.		2
10	6-1/2" or 6-3/4" MWD collars with 4-1/2" IF connections.		2
11	Skid-Mounted pressurized MWD and LWD surface unit with all necessary computers, monitors, printers, equipment and spares for the logs listed above. Sent with certified slings and pad eyes.		1

Note: Contractors shall provide (where applicable), the details of the recommended operating hours and regional MTBF for tools proposed in the bid.

Table 2: LWD Equipment

Sl. No.	Description	Bidders Specifications	Quantity
A	**12-1/4" Hole**		
A.1	GR-Resistivity-Temperature.		2
A.2	Quadrupole sonic		2
A.3	Annular Pressure While Drilling.		2
A.4	Azimuthal Density with Imaging and Neutron Porosity		2
A.5	Formation Pressure while Drilling		2
B	**8-1/2" Hole**		
B.1	GR-Resistivity-Temperature.		2

B.2	Quadrupole sonic		2
B.3	Annular Pressure While Drilling.		2
B.4	Azimuthal Density with Imaging and Neutron Porosity		2
B.5	Formation Pressure while Drilling		2
C	**Real Time Display**		
C.1	Real time Resistivity, Lookahead Resistivity and Neutron-Density modeling software.		1 set

Note: Contractors shall provide (where applicable), the details of the recommended operating hours and regional MTBF for tools proposed in the bid.

Table 3: Personnel

Sl. No.	Description	Qty
1	Directional Driller	01 on rotation basis
2	Directional Driller	01 on call out basis
3	Lead LWD/MWD Engineer	01 on rotation basis
4	LWD/MWD Engineer	01 on rotation basis

12.1 CALL OUT EQUIPMENT

Table 1: Drilling Motor and MWD tools

Sl. No.	Description	Bidders Specifications	Quantity
1	4-1/2" or 4-3/4" SDMM motor w/ adjustable bent housing, 3-1/2" API Reg box down (bit box) and 3-1/2" API IF Box up with required sleeve stabilisers (2-under-gauge, 1 full gauge, 1 slick sleeve/ Blanking Sleeve) for 6" hole		2

2	4-1/2" or 4-3/4" Basic MWD tool with all necessary spares for deviation monitoring and control.		2
3	4-1/2" or 4-3/4" MWD collars with 4-1/2" IF connections.		2

Note: Contractors shall provide (where applicable), the details of the recommended operating hours and regional MTBF for tools proposed in the bid.

Table 2: LWD Equipment

Sl. No.	Description	Bidders Specifications	Quantity
A	**5-7/8" Hole**		
A.1	GR-Resistivity-Temperature.		2
A.2	Annular Pressure While Drilling.		2
B	**8-1/2" Hole**		
B.1	Lookahead Resistivity tool		2
C	**12-1/4" Hole**		
C.1	Lookahead Resistivity tool		2

Note: Contractors shall provide (where applicable), the details of the recommended operating hours and regional MTBF for tools proposed in the bid.

13.0 ADDITIONAL EQUIPMENT AND MANPOWER REQUIRED DURING TWO RIG OPERATIONS

Table 1: Drilling Motor and MWD tools

Sl. No.	Description	Bidders Specifications	Quantity
1	9-5/8" or 9-1/2" SDMM motor w/ adjustable bent housing, 7-5/8" Reg B x B conn, with required sleeve stabilisers (2 under gauge, 1 slick sleeve/blank sleeve) for 17-1/2" and 26" hole each.		1

2	7-7/8" or 8" or 8-1/4" OD SDMM motor w/ adjustable bent housing, 6-5/8" Reg B x B conn, with required sleeve stabilizers (2 under gauge, 1 full gauge, 1 slick sleeve/blank sleeve) for 12-1/4" hole.		1
3	6-1/2" or 6-3/4" SDMM motor w/ adjustable bent housing, 4-1/2" Reg Bottom x 4-1/2" IF top conn with required sleeve stabilisers (2 under gauge, 1 full gauge, 1 slick sleeve/Blank Sleeve) for 8-1/2" hole.		1
4	9-5/8" or 9-1/2" Basic MWD tool with all necessary spares for deviation monitoring and control.		1
5	7-7/8" or 8" or 8 1/4" Basic MWD tool with all necessary spares for deviation monitoring and control.		1
6	6-1/2" or 6-3/4" Basic MWD tool with all necessary spares for deviation monitoring and control.		1
7	9-5/8" or 9-1/2" MWD collars with 7 5/8" Reg connections.		1
8	7-7/8" or 8" or 8-1/4" MWD collars with 6-5/8" Reg connections.		1
9	6-1/2" or 6-3/4" MWD collars with 4-1/2" IF connections.		1
10	Skid-Mounted pressurized MWD and LWD surface unit with all necessary computers, monitors, printers, equipment and spares for the logs listed above. Sent with certified slings and pad eyes.		1

Note: Contractors shall provide (where applicable), the details of the recommended operating hours and regional MTBF for tools proposed in the bid.

Table 2: LWD Equipment

Sl. No.	Description	Bidders Specifications	Quantity
A	**12-1/4" Hole**		
A.1	GR-Resistivity-Temperature.		1
A.2	Quadrupole sonic		1
A.3	Annular Pressure While Drilling.		1
A.4	Azimuthal Density with Imaging and Neutron Porosity		1
A.5	Formation Pressure while Drilling		1
B	**8-1/2" Hole**		
B.1	GR-Resistivity-Temperature.		1
B.2	Quadrupole sonic		1
B.3	Annular Pressure While Drilling.		1
B.4	Azimuthal Density with Imaging and Neutron Porosity		1
B.5	Formation Pressure while Drilling		1
C	**Real Time Display**		
C.1	Real time Resistivity, Lookahead Resistivity and Neutron-Density modeling software.		1 set

Note: Contractors shall provide (where applicable), the details of the recommended operating hours and regional MTBF for tools proposed in the bid.

Table 3: Personnel

Sl. No.	Description	Qty
1	Directional Driller	01 on rotation basis
2	Directional Driller	01 on call out basis
3	Lead LWD/MWD Engineer	01 on rotation basis
4	LWD/MWD Engineer	01 on rotation basis

Exhibit 6

6.0 MUD ENGINEERING SERVICES

1.0 EXPERIENCE

The Contractor should have minimum of five (05) `years of experience in providing Mud Engineering Services to Drilling/E&P Companies with at least three (03) years in offshore areas.

The Contractor should also have executed at least one contract of Mud Engineering Services using proposed mud systems i.e. Water Base Mud System and Synthetic Oil Base Mud System in Deep-water Wells (water depth≥500Mtr) in the last 07 years reckoned from the original bid closing date.

The Contractor should submit laboratory test report (issued by ONGC IDT-Dehradun or any other laboratory of international repute or Bidder's own laboratory) of the formulations conforming to OIL's recommended parameters as per scope of work along with the technical bid. Bids not accompanied by a valid test report shall be rejected. Test report as above received after date opening of tender will not be accepted.

The bidder must confirm in their offer by giving an undertaking that they will submit CVs of four Mud Engineers as per prescribed criteria (in para 16.0 (a) below). If awarded with the contract, the bidder must submit the CVs of four Mud Engineers for approval by the company.

2.0 PLANNED MUD SYSTEMS

The following is a description of the planned mud types and mud properties for the various hole sections. Refer to the introductory section for well locations, depths of casing points and other well data.

Contractors are required to submit mud programs that are along the lines of the planned mud program outlined below, to include product concentrations and total estimated consumption.

(i) 8-1/2" Investigative Hole

This hole section will be drilled with an 8-1/2" bit to the planned depth of the 26" hole interval, in order to determine the absence or presence of shallow gas. The drilling fluid will be seawater and high viscosity sweeps. The sweeps may be composed of HEC in seawater or of pre-hydrated bentonite slightly diluted with seawater. A pit of 10.0 lb/gal kill mud should be available to kill the well if shallow gas is encountered.

After the hole is drilled it will be displaced to 10 lb/gal high vis mud prepared with PHG prior to pulling out of the hole.

(ii) 42" Hole / 36" Conductor

This hole section may be either jetted down with a 26" bit or drilled with a 26" bit / 42" Hole opener. In either case the drilling fluid will be seawater and high viscosity sweeps. The sweeps may be composed of HEC in seawater or of pre-hydrated bentonite slightly diluted with seawater. If the conductor is jetted, it may be necessary to pump some high vis sweeps weighted up to 9 – 10.5 lb/gal.

If the hole is drilled rather than jetted, after reaching the casing point the hole will be swept with a 200 bbl high vis pill, and the hole will be filled with 10 lb/gal high vis mud prepared with PHG.

(iii) 26" Hole / 20" Casing

The drilling fluid will be seawater and high viscosity sweeps composed of either HEC in seawater or PHG (pre-hydrated bentonite) slightly diluted with seawater. After reaching the casing point the hole will be swept with a 200 bbl high vis pill, and the hole will be filled with 11 lb/gal high vis mud.

(iv) 12-1/4" Pilot Hole x 17-1/2" x 20" Hole Enlargement / 16" Liner

The mud system will be LTSOBM

(v) 17-1/2" Hole / 13-3/8"/13-5/8" Casing

The mud system to be used to drill this section will be LTSOBM

(vi) 12-1/4" Hole / 9-5/8"/9-7/8" Casing

The mud system to be used to drill this section will be LTSOBM.

(vii) 8-1/2" Hole / 7" Liner

Drilling fluid for this interval will be LTSOBM used in the previous hole interval.

(viii) 5-7/8" Hole / 4-1/2" Liner (Contingency)

Drilling fluid for this interval will be LTSOBM used in the previous hole interval

3.0 GENERAL SCOPE OF WORK:

Scope of work for the Mud Engineering services are as defined below but not limited to the following:

3.1 The Contractor shall execute the work with professional competence and in an efficient and workmanlike manner.

3.2 Perform all other obligations, work and services which are required by the terms of this Contract, or which reasonably can be implied from such terms as being necessary for the successful and timely completion of the work.

3.3 Comply with all applicable statutory obligations specified in the Contract.

3.4 Contractor shall give or provide all necessary supervision during the performance of the services and as long thereafter within the contract period as Company may consider necessary for the proper fulfilment of Contractor's obligations under the Contract.

4.0 TECHNICAL SCOPE OF WORK:

The Technical Scope of Work is defined and described by the following parameters:

(A) Drilling Fluid Engineering Services,
(B) Drilling Fluid Design
(C) Drilling Fluid Management services,
(D) Drilling Fluid material and Additives Supply.

(E) Base Oil requirements and methodology of Base Oil for LTSOBM

(F) System LCM and other contingency and speciality chemicals

(G) Well Testing Fluid design services including chemicals.

Each of the above services is defined in detail in the following sections/paragraphs.

4.1 DRILLING FLUID ENGINEERING SERVICES

i. The Contractor shall carry out Drilling Fluid Engineering Planning and Designing; Mud preparation and maintenance required for drilling and completing all the phases of the wells by using the rig equipment and in accordance with the detailed drilling operations planned by OIL.

ii. The Contractor shall provide round-the-clock Drilling Fluid engineering services by deploying two mud engineers on the rig in 12 hours duty pattern.

iii. The Drilling Fluid Engineers deployed shall have experience as detailed in Clause 16.0 (a) below.

iv. The Contractor shall mobilize the Drilling Fluid Engineering Services including men and material so as to commence the job prior to the commencement of drilling.

v. The on-site Drilling Fluid Engineer shall provide OIL the daily drilling fluid reports as per standard industry practices.

vi. The on-site Drilling Fluid engineer shall communicate with Company on a daily basis as per operational requirements.

vii. OIL reserves the right to modify its drilling program as per operational requirements.

viii. The drilling fluid engineer shall also collect oil/water/gas samples on the rigs as and when required.

4.2 DRILLING FLUID DESIGN

The contractor shall submit detailed Drilling Fluid engineering programs for each well at least 14 days prior to the commencement of the well. Depending upon the given geological data, Contractor shall design phase-wise Drilling Fluid program, including Drilling Fluid weights, detailed Drilling Fluid composition, recommended doses, total volume usage for each hole section. For each phase, the Contractor shall provide the drilling fluid composition to achieve the required parameters.

The Drilling Fluid design shall include but not limited to the following:

(i) Drilling Fluid systems proposed for different sections.
(ii) Detailed mud system formulation for each section.
(iii) Drilling Fluid parameters for each section.
(iv) Expected chemical consumption and volumes in each section.
(v) Complete cost estimates of building and maintaining the mud system as well as unit cost for each chemical used for each section and all standby chemicals.
(vi) Chemicals proposed for curing losses and release of stuck pipe and to liquidate other drilling fluid related down hole complications with detailed procedures.
(vii) Based on the performance of the mud systems, the Contractor shall undertake suitable studies for improving the performance of the mud system and shall submit the recommendations time to time to Drilling Fluid In charge of Company.

Software and Technical Support:

The Contractor shall provide technical support for customer and on-site engineering along with a suitable software product; the range to include data base program to proprietary packages for drilling fluid data management, advanced drilling fluid engineering, environmental programme and reference databases containing latest technical literature and product summaries.

Contractors shall supply details of their QA/QC procedures as they pertain to the supply of chemicals.

Key Performance Indicators:

Contractor shall provide the Mud Engineering Services under this contract with respect to the following Key Performance Indicators:

- NPT (Mud loss)
- NPT (Stuck pipe)
- NPT (Logging)
- Incidence/frequency of hole pack-off
- Drilling Fluid Cost/meter
- NPT (Supply of chemicals)
- Quality of additives

- Hole cleaning efficiency
- Caliper

The Contractor shall record the key performance indicators in each well and shall submit report and make quarterly presentations on the improvements made in each parameter and future action plan.

4.3 DRILLING FLUID MANAGEMENT SERVICES

Drilling Fluid management service encompasses all the functions and requirements contained in the previous section on Mud engineering services plus:

(i) Inventory control both at the rig and at the Supply Base.

(ii) The Contractor shall also provide actual delivery verification of chemicals and additives.

(iii) The Contractor shall provide complete software package-based services for mud hydraulics, hole cleaning and engineering and also literature on all the types of drilling fluids to be used.

(iv) The Contractor shall maintain and provide Inventory Report fortnightly basis. Well Completion Report shall be submitted after the completion of services on each well within 15 days of completion of the well with full details of complications encountered and remedial measures undertaken to mitigate the complications and remedial measures proposed to be undertaken in future wells. Downhole Complication reports encountered should be submitted within 24 hours of mitigating of the complication in the standard proforma of Company. Company will provide the complication report template to the Mud Engineer at site.

4.4 DRILLING FLUID MATERIAL AND CHEMICALS SUPPLY

(i) The Contractor shall submit detailed specifications along with the Material Specification Data Sheet (MSDS) of all the offered chemicals along with their bid. The specifications of each chemical should reflect the relevant parameters of that additive and indicate its performance required in the test report.

(ii) Contractor shall submit a complete list of chemicals and additives including Barites (4.10 S.G.-Minimum) required for the preparation and maintenance of the specified mud systems.

(iii) Contractor shall ensure enough chemicals and additives that shall be made available to allow for smooth and uninterrupted operations.

(iv) The contractor shall furnish to OIL the test reports as per specifications prior to the delivery of the material at Kakinada Supply Base. All the test reports must reflect the brand name and manufacturer as quoted in the bid and the chemicals used in the well shall be of the same brand and manufacturer and shall be of same specification as submitted with the bid document.

(v) Contractors shall provide the complete chemical product data sheet including the brand name and manufacturer's name of the chemical, specifications of the chemical and Material Safety Data Sheets (MSDS) in respect of all the chemicals proposed to be used at the time of delivery as quoted in the bid.

(vi) Company reserves the right to check the quality of the Mud chemicals at random as per test reports/specification submitted by the Contractor at any point during the duration of Contract.

(vii) Contractor shall arrange for storage of the chemicals and additives at its facilities at Kakinada during the period of the Contract and shall deliver the chemical and additives to shore-based facility at Kakinada as per operational requirement and when instructed by the Company at his own cost.

(viii) The chemicals shall be in the original packaging of the manufacturer. The packing of the chemicals shall be seaworthy, in bags of 25 Kgs/50 Kgs or Pounds in pallets and in drums of not more than 210 Lts capacity which shall withstand the rigorous sea transportation. Chemicals susceptible to moisture shall be packed in moisture proof multiwalled paper bags with polythene lining. Each pallet shall have clearly legible identification marks including the name of the chemical, name and address of the manufacturer, date of manufacture, and address of consignee. All chemicals / drums shall be delivered to Contractor's shore-based facility at Kakinada as per operational requirement in proper pallets / containers for safe and smooth transportation to Rig.

Barite: Barite of API specifications (4.10 S.G. or above) shall be supplied by the Contractor to shore-based facility at Kakinada as per operational requirement in 1.5MT Jumbo bags which shall be loaded into silos and transported to rigs by supply vessels**.** The Contractor shall maintain storage facility at Kakinada and shall

deliver barites to its shore-based facility at Kakinada as per operational requirement.

(ix) Chemicals received in torn packaging and broken drums will not be accepted by Oil India Limited.

(x) Contractor shall provide drill water/seawater for mud preparation and maintenance.

(xi) Contractor shall deliver all chemicals, packed in waterproof pallets only ready for loading onto Offshore supply Vessels (OSV).

4.5 BASE OIL REQUIREMENTS AND EVALUATION METHODOLOGY OF BASE OIL FOR LTSOBM

- Bidder shall submit the specification of proposed Base Oil along with their bid. The bidder should give detail specifications of the base oil along with the bid. Quoted make of base oil shall not be allowed to change during the Contract period.
- Contractor shall submit the test report of the base oil against each consignment as per specification.
- The kinematic viscosity of base oil is required to be a maximum 1.8 mm2/sec @ 400C (ASTM D445) and shall be suitable for both deep water and ultra-deep-water applications. To this effect, contractor has to provide the proven case histories of at least one -5 (five) well for using base oil in similar types of wells.
- The base oil should meet PARCOM / OSPAR criteria as synthetic base oil. Contractor shall provide a certificate from the manufacturer stating that it meets the PARCOM/OSPAR criteria and equivalent to synthetic base oil.
- The base oil should be MOEF / NEERI approved for toxicity. Bidder shall give an undertaking along with the bid that the proposed Low Toxic Synthetic oil-based mud system is low toxic & conforms to Government of India regulations including the Indian CPCB (Central Pollution Control Board) and MOEF guidelines for toxicity levels and other limits.
- The formulated Synthetic Oil based drilling fluid should be low toxic having composite toxicity of 96 hrs. LC-50 values greater than 30,000 mg/l as per Mysids toxicity or toxicity test conducted on locally available sensitive sea species at MOEF (Ministry of Environment and Forests) approved national laboratories such as NEERI, NIO, Goa or

equivalent.

- All the mud additives and chemicals should be of low toxicity, and the levels shall be lower than specified by CPCB. The toxicity level should be based on UKOCNS or PARCOM standards of low toxic chemicals or its lab test results should certify this.
- Contractor shall submit the bioassay report from the NEERI of India / NIO / or equivalent laboratory for certification of low toxicity of the base oil and the LTSOBM formulation. The bioassay report should not be older than 18 months from date of tender opening to OIL. The report is to be submitted within sixty (60) days to user section after placement of NOA.

Payment methodology of Base Oil

- OIL shall link the base oil price to the gas oil index on the given date, to the average gas oil index published by Platts, Singapore (Mean of Platts, Singapore, and Gas Oil index 50ppm Sulphur –MOPS GO 50 ppm). Base oil price shall be calculated as sum of fixed component and variable component. Fixed component includes charges on account of transportation, insurance, port clearance & handling charges & other charges up to destination (Kakinada). Fixed price component once quoted shall remain in force till completion of the contract period and payment shall be made accordingly.
- The variable component of the base oil will be average of MOPS GO 50 ppm index. The Variable component of base oil cost for tender evaluation will be average of MOPS GO 50 ppm index for the previous month of NIT date, e.g., if the tender downloading date starts from the month of **May' 2026** MOPS GO 50 ppm for the month of **April' 2026** will be taken for evaluation purposes.
- The Variable component of base oil cost for payment will be the Average gas oil index MOPS GO 50 ppm for the previous month in which the base oil has been purchased. Date of bill of lading shall be considered as the date of purchase.
- Gas–oil index (MOPS GO 50 ppm) to which the variable component of base oil price is linked will not be allowed to change during the contract period.

5.0 TESTING OF DRILLING FLUID SYSTEMS

5.1 The mud system proposed must be supported by the test reports from ONGC, IDT-Dehradun or any other laboratory of international repute or Bidder's own laboratory. The Bidder shall design the Phase wise mud systems as per the Mud Weight and

dosages (fixed / variable) components and obtain the parameters as stated elsewhere in the tender document. A test report to that effect must be submitted along with the technical bid by the Bidder.

5.2 The Bidder must submit the sequence of mixing of the chemicals and the duration of mixing time after each addition for the above testing. The above testing should be carried out using Distilled water and following Standard Test procedures.

5.3 The Mud Weights & pH of the Muds will be measured prior to hot rolling. Other parameters will be measured at the stated temperature after hot rolling wherever hot rolling is there.

5.4 After hot rolling the pH of the mud will be adjusted to the pH stated in the particular mud system.

5.5 An additional quantity of Barites in excess of the quantity suggested in the formulation to be added if required to achieve the specified Mud weight of the formulation.

5.6 Successful bidder shall submit one set of chemicals under sealed condition to OIL for preparing 5 Liters of Mud which were used at the time of making Mud Formulation in their Laboratory for each Mud System prior to initial mobilization of chemicals to Kakinada for future reference.

5.7 The Bidder can submit the Test Reports not older than 06 months from the date of submission of Bid as per Mud parameters of SOW.

5.8 The Contractor shall provide the same brand of chemicals during the contract as stated in the test report submitted along with the bid for various drilling fluid systems as well as stated in the price bid. During execution stage, if contractor wants to switch over to alternative manufacture which should be mentioned in the bid itself for a particular chemical, it has to be approved through test report of formulation from the authorized lab.

5.9 The different testing conditions and hot rolling time are as placed below for all the mud systems:

Sl. No.	Hole size inch	Mud System	Interval	Testing Conditions /Mud Properties
1	36" / 26"	Sea Water with Pre-Hydrated Bentonite Sweeps intermittently	Spud Section	The Spud mud shall be Sea Water. No hot rolling is required
2	12-1/4" Pilot Hole x 17-1/2" x 20" Hole Enlargement	LTSOBM	Intermediate Section	No hot rolling is required
2	17-1/2"	LTSOBM	Intermediate Section	No hot rolling is required
3	12-1/4 "	LTSOBM	Intermediate Section	Mud Weight – 12 – 12.5ppg PV (cp) – ALAP YP (lbs/100sf) – 18 – 22 6 rpm – 10 – 12 HPHT (cc) - <4 O/W ratio – 65 – 70 WPS w/w%CaCl2 – 18 – 20 ES (volts) - >500
4	8-1/2"	LTSOBM	Final Pay zone Section	Mud Weight – 13 – 13.4ppg PV (cp) – ALAP YP (lbs/100sf) – 18 – 22 6 rpm – 10 – 12 HPHT (cc) - <4 O/W ratio – 65 – 70 WPS w/w%CaCl2 – 18 – 20 ES (volts) - >500

5	5-7/8"	LTSOBM	Final Pay zone Section	Mud Weight – 13 – 13.4ppg PV (cp) – ALAP YP (lbs/100sf) – 18 – 22 6 rpm – 10 – 12 HPHT (cc) - <4 O/W ratio – 65 – 70 WPS w/w%CaCl2 – 18 – 20 ES (volts) - >500

6.0 QUALITY CONTROL OF MUD CHEMICALS AND ADDITIVES

a. During execution of contract, samples of all formulation chemicals (as per original test report) will be drawn from Contractor warehouse at Kakinada in presence of Contractor's representative and all LTSOBM formulations will be tested at Contractor's laboratory minimum once in a half-yearly as per formulation quoted by bidder in the bid. If the formulation fails to meet the corporate specification, a cost of 1.0% of the annual contract value of Drilling fluid services will be deducted against each formulation. Testing Charges will be borne by OIL.

b. If during the operations, any chemical is found to be substandard and or not conforming to the specifications, Contractor shall replace the material immediately. The Contractor shall pass on the credit to OIL for any such material used and/ or alternate chemical to be used in place of substandard chemical till the material is replaced with quality product. OIL reserves the right to terminate the contract if chemicals or additives are found to be substandard.

c. OIL reserves the right to check the quality of the Drilling Fluid/Completion/Testing Fluid chemicals at random as per test reports / specification submitted by the Contractor at any point during the duration of Contract at Contractor's Base/warehouse or / and the Rig.

d. Contractor shall furnish to OIL the test reports as per specifications prior to the delivery of the material at Shore Supply Base. All the test reports must reflect the brand name and manufacturer as quoted in the bid and the chemicals used in the well shall be of the same brand and manufacturer and shall be in no way inferior to the quality indicated in the test reports submitted with the bid document.

e. Contractor should have effective QC procedures that ensure that all chemicals and materials provided meet the design requirements and also comply with the relevant API standards as appropriate, and OIL reserves the right to audit Contractor's QC operation.

f. Contractor shall submit the test report of each chemical brought to their warehouse prior to usage at the rig to ensure quality of material as per specifications

g. Contractors shall perform the QC tests on drilling fluid samples and all drilling fluid related products on request.

h. Contractor shall perform laboratory testing of formulations on request to ascertain the performance of the fluids and the measure of the rheology.

i. After testing, Contractor shall issue the reports summarizing the test and test results.

j. Contractors shall supply details of their QA/QC procedures as they pertain to the supply of chemicals

6.1 LIKELY DRILLING FLUID FORMULATION

The tentative Drilling Fluids policy to be followed is as given below:

HOLE SIZE	DRILLING FLUID SYSTEM	REMARKS
42"	Sea Water-Hi Vis Gel Sweeps	Pump & Dump Policy may be adopted to drill a section of 26" hole
26"	SW-HV Gel Sea Water-Hi Vis Bentonite Gel Sweeps / XC Polymer Sweeps	
20"/17-1/2"/ 12-1/4"/8-1/2" / 5-7/8"	LTSOBM (Low toxic Synthetic Oil based drilling fluid)	LTSOBM system to be used for drilling.

7.0 SAFETY AND ENVIRONMENT

7.1 Contractors shall provide the Material Safety Data Sheets (MSDS) with respect to all the chemicals proposed to be used in the contract.

7.2 Contractor shall ensure safe conditions and methods of work and maintain the same throughout the period of Contract.

7.3 Contractor shall comply with the applicable environmental laws, regulations and practices, and is required to perform work so as to minimize the generation of hazardous waste to the extent technically feasible.

7.4 The Contractor shall:

(a) Make available for inspection by OIL upon request all registers, records and any other documentation on environmental aspects of the activities being carried out or on the environmental management system implemented by the Contractor.

(b) Responsible for disposing of left over mud/brine in accordance with all local requirements as per Andhra Pradesh / Odisha State Pollution Control Boards and for activities conducted offshore as per MOEF&CC guideline.

7.5 Contractor is required to maintain a logbook wherein waste generated for the mud systems and subsequent disposal is recorded.

8.0 LEFTOVER CHEMICALS AND ADDITIVES

8.1 At the end of the contract period, Contractor must take back the left over/unused chemicals and additives after completion of Contract from Shore Base at Kakinada within 15 days from date of intimation about the same at its cost. If due to any reason leftover/unused chemicals and additives are not lifted from Shore Base at Kakinada, the contractor will be liable to pay penalty charges @Rs10,000/day.

8.2 Containers belonging to the Contractor used to transport material to the rig shall be returned to the Contractor. All unused / leftover chemicals and additives on rigs shall be transported back from the rig to Shore Base at Kakinada.

8.3 It would be the responsibility of the Contractor to re-export or dispose of as deemed fit, as per existing regulations, the leftover chemicals and additives within 60 days after the completion / expiry of the Contract under intimation to OIL.

8.4 It would be the responsibility of the Contractor to dispose of all the empty barrels/empty chemical bags/ Carboys/empty IBC/used filter cartridges brought from the site.

NOTE: Once Barite is being taken into Silos after cutting the bags, Barite will be treated as consumed. All opened bags and Drums for chemicals and additives will also be treated as consumed.

9.0 TECHNICAL DATA:

9.1 PLANNED MUD PROGRAMME:

Tentative Drilling Fluids policy: The tentative Drilling Fluids policy to be followed is as given below-

HOLE SIZE	DRILLING FLUID SYSTEM	REMARKS
42"	Sea Water-Hi Vis Gel Sweeps	Pump & Dump Policy may be adopted to drill a section of 26" hole.
26"	SW-HV Gel Sea Water-Hi Vis Bentonite Gel Sweeps / XC Polymer Sweeps	
20" / 17-1/2"/ 12-1/4"/ 8-1/2" / 5-7/8"	LTSOBM (Low toxic Synthetic Oil based drilling fluid)	LTSOBM system to be used for drilling.

9.2 SPUD DRILLING FLUID FORMULATION (for 42"/36"/26" Phase):

Sl. No.	Mud Chemicals	Brand name	Source of supply: Local / Imported	Dosage ppb
1	Bentonite			35
2	Caustic Soda			0.05
3	Soda Ash			0.05
4	HEC-Sweep / Guargum sweep / CMC (HVG) / PHB Sweep			1.5

9.3 LTSOBM FORMULATION & TENTATIVE VOLUME

(for 20"/17-1/2"/ 12-1/4"/ 8-1/2"/5.7/8" Sections)

Only samples for formulations Option-I, II and III are required to be tested and test report should be submitted with the bid and must not be older than 18 months from the tender opening date.

9.4 OPTION-I: LTSOBM System: Rheological parameters measured at 120±4°F after hot rolling at 250±4° F

CHEMICAL NAME		**LTSOBM FORMULATION (Up to 11 PPG) (OFFSHORE AREAS)**
Rheological parameters measured at		**120±4°F after hot rolling at 250±4°F**
1.	Drilling Fluid Weight at 75±4°F (BHR), ppg.	Up to 11.0 ppg
2.	Plastic Viscosity, cp	40 (Maximum)
3.	Yield Point, *lbs/100 sq. ft.*	25-35
4.	Gel0, *lbs/100 sq. ft.*	10-20
5.	Gel30, *lbs/100 sq. ft.*	15-30
6.	6 rpm LSRV, Dial reading	8-16
7.	O:W ratio	70:30
8.	WPS (Cl^-), g/l	170-190
9.	Emulsion Stability at 120±5^{0}F, Volts	550 (Minimum)
10.	HPHT Filtration Loss (30 mins. at 300°F/500 psi as per API, all oil), ml	5.0 (maximum)

9.5 OPTION-II: LTSOBM System: Rheological parameters measured at 120±4ºF after hot rolling at 250±4° F

CHEMICAL NAME		LTSOBM FORMULATION (11.0 - 14.0 PPG) (OFFSHORE AREAS)
Rheological parameters measured at		**120±4°F after hot rolling at 250±4°F**
1.	Drilling Fluid Weight at 75±4°F (BHR), ppg	11 ppg to 14.0 ppg
2.	Plastic Viscosity cp	40
3.	Yield Point *lbs/ 100 sq. ft.*	25-35
5.	Gel0 *lbs/100 sq. ft.*	10-20
6.	Gel30 *lbs/100 sq. ft.*	15-30
8.	6 rpm LSRV at 120±4°F, Dial reading	8-16
9.	O:W ratio	70:30
10.	WPS (Cl^-), g/l	170-190
11.	Emulsion Stability at 120±5°F, Volts	550 (Minimum)
12.	HPHT Filtration Loss (30 mins at 300°F / 500 psi as per API, all oil), ml	5.0 (maximum)

9.6 OPTION-III: LTSOBM System: Rheological parameters measured at 120±4ºF after hot rolling at 250±4° F

CHEMICAL NAME		LTSOBM FORMULATION (14.0 - 18.0 PPG) (OFFSHORE AREAS)
Rheological parameters measured at		**120±4°F after hot rolling at 250±4°F**
1.	Drilling Fluid Weight at 75±4°F (BHR), ppg	14.0 – 18.0
2.	Plastic Viscosity, cp	45 (Maximum)
3.	Yield Point, *lbs/ 100 sq. ft.*	25-35
5.	Gel0, *lbs/100 sq. ft.*	10-20
6.	Gel10 at 120±4°F, *lbs/100 sq. ft.*	12-30
7.	Gel30, *lbs/100 sq. ft.*	15-30

8.	6 rpm LSRV at 120±4°F, Dial reading	8-16
9.	O:W ratio	70-30
10.	WPS (Cl^-), g/l	170-190
11.	Emulsion Stability at 120±5°F, Volts	550 (Minimum)
12.	HPHT Filtration Loss (30 mins at 300^0F /500 psi as per API, all oil), ml	5.0 (maximum)

The Rheology to be measured at 120±4°F after hot rolling at 250±4°F for 18 hours. The composition and test results shall be verified & witnessed by Company representative by a standard method at Contractor's laboratory or any other reputed third-party laboratory at the cost of Contractor (for the experimental costings only).

11.0 FILTRATION UNIT

Provision to be kept by the Bidder / Contractor for supply of Dual pod Brine filtration unit (Duplex with cartridge) on call out basis along with personnel. The specification of Dual pod Brine filtration unit (Duplex with cartridge) is as below:

(a) Bag type Filter unit – for upstream coarse filtration.
(b) Cartridge type filter unit for filtration brine up to 2 microns.
(c) Filter Housing- Designed as per ASME Sec VII Division I
(d) Vessel material- Stainless Steel 316 grade
(e) Swing type eye bolts along with davit pipe help easy opening of the filter housing for quick changing of filter cartridge
(f) Filter Media - Polypropylene pleated cartridge
(g) Construction- 304/316 Stainless Steel constructions, 10-18 bbl/min/vessel flow capacity approx., 52 pleated PP cartridges per vessels, 78 Sq. m (840 Sq. ft) filtration area per vessel.
(h) 4" inlet/outlet Series & Parallel piping work suitable for 10 bar operation
(i) Dimension – Approx. 2.75m/1.3m/2.35m height/1900 kg

11.1 Tentative Consumable for filtration unit: (bags & cartridge as given below).

The consumables mentioned below are indicative only per rig operation. Contractor to maintain enough consumables so that operations are not hampered.

(a) Filter bag type 50 Micron - 600 no

(b) Filter Bag type 25 Micron – 600 no.

(c) Filter Cartridge Type 10 Microns – 600 no.

(d) Filter Cartridge Type 5 Microns – 600 no.

(e) Filter Cartridge Type 2 Micron - 600 no.

12.0 WELL TESTING FLUID:

The following bine or its combination to be used per well during testing of the wells. The Contractor to make provision of the following

BRINE:

Brine Chemical (min. purity)	Volume required along with Sp.Gr.
KCl (97%)	6000 bbl of 9.5ppg
Sodium Chloride (99%)	6000 bbl of 10.0 ppg
Sodium Chloride-Sodium Bromide	6000 bbl of 12ppg
Calcium Chloride (94%)	6000 bbl of 11.5 ppg
Sodium Formate (96%)	6000 bbl of 10.5 ppg
Potassium Formate (96%)	6000 bbl of 13.0ppg
Sodium formate-Potassium Formate brine	6000 bbl of 13.4 ppg
Calcium Chloride Brine (91.5% purity)	6000 bbl of 14.2 ppg
Calcium Chloride-Calcium Bromide (IBC)15 ppg	6000 bbl of 15 ppg

13.0 LIST AND QUANTITIES OF CHEMICALS:

The following chemicals should be stocked in Contractor's Base at Kakinada in staggered manner and transferred to shore-based facility at Kakinada as per operational requirement at his own cost. The estimated quantities mentioned below will be considered for evaluation. However, the payment will be made on an actual consumption basis. At the end of the contract period, Contractor must take back the left over/unused chemicals and additives after completion of Contract from Shore Base at Kakinada.

Requirement During both Rig operations

Sl. No.	Name of Chemical	Brand name of Chemical	Estimated Total Quantity of Chemicals required per well	Unit
WBM CHEMICALS & LTSOBM CHEMICALS				
1	Barite (Sp. Gr. - more)		3000	MT
2	Bentonite		200	MT
3	CMC-LVG		8000	KG
4	CMC-HVG		8000	KG
5	XC-Polymer		15000	KG
6	PAC-R		8000	KG
7	PAC-LV		10000	KG
8	Caustic Soda (NaOH) (Purity 95% min)		5000	KG
9	Caustic Potash (KOH)		5000	KG
10	PHPA (active content min 40%)		15000	LITRE
11	Sodium Bicarbonate		1500	KG
12	Guar gum		8000	KG
13	Polyol		15000	LITRE
14	Hydroxy Ethyl Cellulose (HEC)		8000	KG
LTSOBM				
15	Base Oil (MOEF Compliant, NEERI / NIO approved)		7000	BBL
16	Mud Additive Cost – LTSOBM – up to 11.0 ppg		7000	BBL
17	Mud Additive Cost – LTSOBM – 11.0 ppg to 14.0 ppg		4000	BBL
18	Mud Additive Cost – LTSOBM – 14.0 ppg to 18.0 ppg		3000	BBL
CONTINGENCY & SPECIALITY CHEMICALS				

1	Kwik seal (F, M,C) or equivalent		5000	KG
2	Wallnut Shell (F, M, C)		5000	KG
3	Mica		7000	KG
4	Speciality LCM (single sack to control severe to total losses		10000	KG
5	Saw Dust		5000	KG
6	Oxygen Scavenger		5000	KG
7	Biocide		5000	LITRE
8	Defoamer		5000	LITRE
9	Polymeric Sealing agent		10000	KG
10	Low Clouding Glycol (Cloud Point 25 to 35 Deg C)		5000	LITRE
11	Organoclay		10000	KG
12	Calcium Carbonate F (Purity 98% minimum)		20000	KG
13	Calcium Carbonate M (Purity 98% minimum)		20000	KG
14	Calcium Carbonate C (Purity 98% minimum)		10000	KG
15	Stuck Pipe Fluid/Spotting Fluid for LTSOBM		7000	LITRE
16	Zinc Carbonate		2000	KG
17	Potassium Sulphate (97% Purity – minimum)		300	MT
18	Starch (WBM)		10000	KG
19	Mono Ethylene Glycol (MEG)		3000	LITRE
20	Wellbore Clean up Chemical Package		1000	BBL
21	Monoethaolamine or equivalent		1000	KG
22	Polyamine (WBM)		15000	LITRE
23	Soda Ash (Purity 98.5% min)		3000	KG
24	Ammonium Bi Fluoride		1000	KG
25	HCL		1000	LITRE

26	Lime		5	MT
COMPLETION / BRINE CHEMICALS				
1	Sodium Chloride (99% Purity – minimum) for preparing brine up to 10 ppg		300	MT
2	Calcium Chloride (95% Purity – minimum) for preparing brine up to 11.4 ppg		600	MT
3	AnhydrouS Calcium Bromide Salt (99% Min) purity		50	MT
4	Calcium Bromide (14.2 ppg) IBC		1500	BBL
5	Calcium Chloride + Calcium Bromide (15 ppg) IBC		1500	BBL
6	Corrosion Inhibitor for Brine		2000	KG

14.0 MUD LABORATORY EQUIPMENT ON RIG

Contractor shall provide complete Drilling fluid testing equipment, chemicals / reagents glassware and consumables as per Annexure-1 for testing of mud as per API standards. The Laboratory equipment shall not be more than 10 (Ten) years old as on the original bid closing date.

15.0 DUTIES AND POWER / AUTHORITY:

15.1 Company's Site Representative:

The duties and authorities of Company's site representative are to act on behalf of Company for:

i) Overall supervision, co-ordination, and Project Management at site
ii) Proper and optimum utilization of equipment and services.
iii) Monitoring of performance and progress.
iv) Accepting of reports made by the Contractor's representative at site in respect of works, receipts, consumption etc. after satisfying himself with the facts of the respective cases.
v) He shall have the authority, but not obligation always and any time to inspect/test/examine/verify any equipment machinery, instruments, tools,

materials, personnel, procedures and reports etc. directly or indirectly pertaining to the execution of the work. However, this shall not construe to imply an acceptance by the inspector. Hence, the overall responsibility of quality of work shall rest solely with the Contractor.

vi) Each and every document emerging from site in support of any claim by the Contractor must have the countersignature/comments of the Company's representative without which it shall not be entertained by Company.

15.2 Contractor's representative:

i) The Contractor's representative shall have all the powers requisite for the performance of the Service/Works, subject to holding due authorization from the Contractor.

ii) Contractor's representative(s) shall liaise with Company's representative for the proper coordination and timely completion of the works and on any matter pertaining to the works.

iii) Contractor's representative(s) shall extend full co-operation to Company's representative/inspector in the manner required by them for supervision/ inspection/ observation of equipment, material, procedures, performance, reports, and records pertaining to works.

iv) To have complete charge of Contractor's personnel engaged in the performance of the work and to ensure compliance of rules and regulations and safety practice.

16.0 PERSONNEL TO BE DEPLOYED BY CONTRACTOR:

Contractor warrants that it shall provide competent, qualified and sufficiently experienced personnel to perform the work correctly and efficiently.

a) Contractor shall provide following Drilling Fluid service personnel as per OIL requirement. Contractor shall provide round the clock Drilling Fluid engineering services by employing two rig site Drilling Fluid engineers at a time one each in 12-hour shifts. The engineers and supervisor should be able to communicate in English. The onsite engineers shall communicate with OIL coordinator on a daily basis. OIL shall provide free access to its communication system to them.

S. No.	Designation	Qty.	Experience & Responsibility
1	Base Mud Coordinator (To be provided at no cost to Company)	1 No. (Common for all rigs)	Experience: should be experienced in planning, designing and supervising Drilling Fluid Engineering Services in minimum 10 deep water wells of proposed drilling fluid system having at least experience of 5 deepwater wells with LTSOBM systems. Responsibility: Base Mud Coordinator shall co-ordinate with OIL and shall carry out drilling fluid planning, designing and monitoring operations to drill all sections of wells & shall interact with Head-Drilling Fluids Services or his representative, on a daily basis to plan technical backup in order to ensure successful drilling of wells of OIL by trouble shooting & providing necessary mid-course correction in the planning and execution of drilling fluids. The Base Mud Coordinator shall be responsible for logistic management of chemicals / materials, equipment/tools and personnel related to work, including customs clearance, transport and inspection if required and services at Liquid Mud plant.
2	Lead Mud Engineers	1 No. per rig	The lead drilling fluid engineers should have a minimum of 7 years drilling fluid engineering experience along with the relevant work experience of at least 5 deep water wells in using each of the LTSOBM and Water Based drilling fluid systems. The Drilling Fluid Engineers should also be well versed with the use of heavy weight brines
3	2nd Mud Engineers	1 No. per rig	The 2nd drilling fluid engineers should have minimum experience of 5 years drilling fluid

			engineering along with the relevant work experience of at least 3 deep water wells using the Water Based drilling fluid and LTSOBM fluid Systems. The Drilling Fluid Engineers should also be well versed with the use of heavy weight brines.
4	Filtration Engineer (On Call out basis)	1 No. per rig	One (01) filtration engineer with at least three (3) years of relevant experience
5	Filtration Assistants (On Call out basis)	2 No's per rig	Two (02) filtration assistants with at least two (2) years of relevant experience at a time.
6	LMP Operators Shore Based	2 No's (Common for all rigs)	Two (02) LMP operators with at least two (2) years of relevant experience at a time.

16.1 The Contractor should ensure that their personnel observe all statutory safety requirements including those prescribed by the Company. Upon Company's written request, Contractor, entirely at its own expense, shall remove immediately any personnel of the Contractor determined by the Company to be unsuitable and shall promptly replace such personnel with personnel acceptable to the Company. The Contractor shall remove and replace such employees at their expense within 15 days if replaced by National Crew and 30 days if replaced by Expatriate from the time of such instruction given by the Company. If no replacement has been provided within this time the Company shall reduce the daily rate by the amount specified for this category under Clause No: 7.0 of SCC (Part-3, Section-III of tender document) until such replacement has been provided.

16.2 The Contractor shall be solely responsible throughout the period of the Contract for providing all requirements of their personnel including but not limited to, their transportation to & fro helicopter base at Vizag/ Bhubaneswar, enroute/local boarding, lodging, personal protective gear & medical attention etc. Company shall have no responsibility or liability in this regard.

16.3 Contractor's personnel shall be fluent in English language (both writing and speaking).

16.4 Company reserves the right to select & provide Senior Mud Engineers contracted directly to Company. The Contractor shall (if required by the Company) provide the following Personnel to perform mud engineering services at the drilling location:

(a) Mud Specialist(s)/Mud Engineer(s), National or Expatriate, who are familiar with the proposed mud systems. The Personnel should also have experience specific to the area or be experienced in deep water drilling areas (on at least 1 well in water depths of more than 1500 m) prone to overpressure, lost circulation and reactive clays.

(b) In addition, the following Personnel shall be provided at the Contractors cost in Kakinada to perform various administrative duties and to liaise with the Company:

(i) Operations Co-ordinator.

(ii)Administrative and Logistics Support Staff as needed.

(c) The working schedule of the Contractors personnel at the drilling location shall be on rotational basis unless otherwise agreed by the Company in advance. All Personnel shall be on 24-hour call whilst at the drilling location unless otherwise advised by the company.

(d) The Contractor shall provide appropriate Personal Protective Equipment (PPE) and work clothing for all its Personnel at the drilling location. The Company requires that all personnel at the drilling location should be furnished as a minimum with:

(i) safety helmet

(ii) safety footwear (steel-toecap)

(iii) work clothes (suit or coverall)

(iv) protective gloves

(v) hearing protection

(vi) eye protection

(e) The Contractor shall be solely responsible for all transportation of its personnel to and from the airport or base location designated by Company. Transportation of Contractor's personnel between the drilling location and Company designated airport or base location, shall be the responsibility of the company.

(f) Personnel supplied by the contractor must be approved by the Company in writing prior to the commencement of the contract.

(g) The Contractor shall submit detailed curriculum vitae for all personnel proposed for the contract. The availability of these personnel may be a condition for award of contract.

(h) Personnel must be fully experienced in monitoring and maintaining the proposed drilling mud under all the anticipated drilling conditions at the drilling location.

(i) Personnel will continuously monitor Mud Chemical concentrations and discharges and their potential environmental impact.

(j) Personnel will continuously monitor mud properties, treatments, pit and hole volumes, mud losses to hole and at surface, mud losses to solids control equipment, and report these on a Daily Mud Report or when requested by the Company.

(k) Personnel will monitor and endeavour to optimise all solids-control equipment operating efficiencies. They shall also ensure that all necessary and appropriate spares and consumables are available and advise the Company representative(s) of any deficiencies.

(l) The Company shall be entitled to designate a Company representative at the drilling location who shall at all times have access for the purpose of observing mud tests, evaluating the engineering services performed by the Contractor or verifying the record of items furnished by the Contractor. Such Company representative(s) shall be empowered to act for the Company in all matters relating to the Contractors operational performance under the Contract.

16.5 Contractor shall submit to Company the resume of the personnel, for its approval, to be deployed showing the technical qualifications, training and mud engineering related experience as per the format given below. The Company reserves the right to accept or reject any personnel proposed by the Contractor. The contractor shall submit CVs of the above personnel to the company within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for-Company's approval. The Contractor shall not deploy its personnel unless cleared by the Company.

NAME	:
NATIONALITY	:
DATE AND PLACE OF BIRTH	:
PASSPORT NO AND VALIDITY (Wherever applicable)	:
POSITION	:
QUALIFICATIONS	:
TRAINING	:

WORKING EXPERIENCE :
NUMBER OF WELLS WITH DETAILS :

Note: Indian laws require all foreign nationals to have a Business Visa (work permit) to work in the country. Also, there are restrictions on citizens of certain countries being able to work Offshore. Contractors are advised to check-up with the concerned authorities prior to selecting their crew personnel.

17.0 SERVICES TO BE FURNISHED BY THE COMPANY:

The following services shall be provided by the Company at no cost to the Contractor:

(i) All transportation of the Contractors Personnel between the Company drilling location and Company designated airport or shore base.

(ii) Labour and equipment for loading and unloading the Contractor's Mud chemicals, Equipment and Supplies at the Drilling Location.

(iii) Accommodation, meals, housekeeping services and supplies at the Drilling Location for the Contractors' Personnel.

(iv) First Aid and other emergency medical aid for the Contractors' Personnel at the Drilling Location to the same extent as furnished to the Company's own employees.

18.0 TECHNICAL SUPPORT

The following technical support shall be provided by the Contractor as and when required, free of cost**.** This will include but not be limited to:

(i) Testing and analysis of chemicals and bulk, in line with API and other current specifications and provide detailed results of tests if required.
(ii) Pilot test / fully test mud properties based on suggestions from Company.
(iii) Test clay and other formations samples supplied by the Company against specified mud types and chemicals for compatibility of drilling fluid to formation type.
(iv) Recommend improvements to or to the mud system being proposed or used, based on information gained from Company and other parties. This may include suggestions for the use of additional or alternative products (where approved).

19.0 SAFETY, HEALTH AND ENVIRONMENT

a. Contractor will ensure safe conditions and methods of work and maintain the same throughout the period of contract. Contractor shall carry out all activities in accordance with the highest international standards of the offshore oil and gas industry, ensure safe conditions and methods of work and maintain the same for the entire period of contract

b. Contractor shall comply with the applicable environmental laws, regulations and practices, and is required to perform work to minimize the generation of hazardous waste to the extent technically feasible.

c. To determine the validity thereof, OIL shall have the right to require all Contractor's Personnel travelling to a work site to produce originals or, at OIL's discretion, copies of the following documents as applicable:

    - Passport
    - Work Permit
    - Employer's Liability Insurance Certificate
    - Safety Trainings mentioned in SOW
    - Medical Examination Report

d. Any Contractor Personnel who do not produce the documents listed above when requested by OIL shall not be allowed to travel to or work at the work site. Any cost arising directly or indirectly from such event will be borne solely by Contractor.

e. OIL has a weapons, alcohol and drug free policy on all its sites, both onshore and offshore. Contractor shall comply with and shall ensure that Contractor Personnel complies with OIL's requirements in relation to its weapons, alcohol and drug free policy as below:

    - Alcohol and drugs, except those prescribed by a qualified medical practitioner, are prohibited from any offshore installation, work site or other OIL location.
    - Contractor shall ensure that any Contractor Personnel who are either temporarily or permanently taking drugs under medical supervision are able to produce to OIL on request an appropriate letter from a recognized medical practitioner. Such individuals shall immediately on arrival at the work site report to the Medical Officer or, if not available, OIL Representative, and lodge with them a copy of their own medical practitioner's letter.

      Any person travelling offshore with prescribed drugs/medications shall surrender them to the Embarkation Officer who will forward them directly to

the Medical Officer who will supervise the use of the drugs/medication while the person is in offshore.

- Contractor shall obey all local rules, regulations and customs pertaining to alcohol and drugs prevailing in the country where the work is to be performed.
- Any person reporting for work either under or appearing to be under the influence of alcohol or drugs shall not be allowed to commence work or travel to the Work site. Contractor shall be responsible for all costs relating to the replacement of such people.

f. Contractor shall provide OIL Representative with a copy of any report or statement or written evidence concerning any accident or dangerous event which occurs during the performance of the work or any other incident indicating the existence of adverse safety conditions of which Contractor Personnel may become aware.

g. Upon request, Contractor shall supply OIL with copies of all reports and documents regarding safety matters that are required by legislation to compile or maintain together with such other reports as OIL may require.

h. If Contractor considers it necessary to suspend the work at any time for reason(s) of safety, Contractor shall immediately do so and inform OIL of such reason(s).

i. Contractors should provide appropriate protective clothing where necessary for the protection of Contractor Personnel whilst performing the work. The cost of providing such protection shall be deemed to be included in the rates contained in this Contract. If Contractor fails to meet its obligations in this regard, OIL reserves the right to issue Contractor Personnel with protective clothing and/or replacement protective clothing. OIL shall deduct all costs associated therewith from monies becoming due to Contractor under this Contract or any other contract between the parties.

j. Where applicable, Contractor's arrangements for incident management shall be integrated with the requirements of any established policy or procedure for the work site.

k. All equipment used by contractors should be flameproof.

l. Contractor shall ensure all standard safety practices are adhered to during loading and unloading of Base Oil/LTSOBM from tankers to supply vessels/Liquid Mud plant and vice versa. Contractors should also ensure that the people being deployed for loading / unloading of Base Oil/LTSOBM are well versed in standard safety practices.

m. Contractor shall ensure that tankers transporting Base Oil/LTSOBM are approved for transportation of such types of fluids.

20.0 ENVIRONMENTAL PROVISIONS

Contractor shall in connection with the work hereunder:

a. Follow all local customs, rules and regulations. Where unclear, prior consultation must be conducted with OIL.
b. Protect environmental resources by applying best available techniques to eliminate or minimize any direct or indirect impact from operations.
c. Ensure that all activities are planned in a manner that will not create unnecessary danger, disturbance or effects on the environment or to other users.
d. Ensure that all the chemicals and formulations used under this contract comply with any OIL standards and/or legislation concerning the environment in the location where the work is to be carried out.
e. Ensure that all people affected or likely to be affected by the execution of the work are not exposed to substances or agents which may give rise to adverse health effects. Contractor should ensure that all Contractor Personnel are fully trained in the appropriate control measures to be implemented and have been provided with and use the correct personal protective equipment.
f. Give OIL notice within a reasonable time prior to the delivery or removal from the work site of any substance which is toxic or hazardous to health or potentially harmful to the environment. The notice shall identify the hazards and effects and assess the risks to personnel and the environment. Details of the precautions to be taken when using, handling, transporting, storing or any other means of contact will also be provided. Contractor shall ensure that the substance is suitably packaged and always labelled.
g. Make available upon request all registers, records and any other documentation on environmental aspects of the activities being carried out or on the environmental management system implemented by Contractor.
h. If so, requested by OIL, prepare and maintain a plan documenting requirements, responsibilities and organization for environmental management. The plan should be readily understood by all personnel and should cover routine, non-routine and emergency operations and be agreed in advance with OIL.
i. If applicable, ensure that prior to the commencement of the work all companies, organizations and communities that could potentially be affected by the activity have been notified.

j. Minimize, where reasonably practicable, nuisance, disturbance or interference to the community, their activities, local fishing and any other forms of aquaculture, agriculture and other users of the environment.
k. Unless otherwise directed by OIL, avoid conducting activities in protected areas or where there is an intolerable risk of damage to sensitive environmental resources.
l. Ensure that Contractor Personnel shall not engage in fishing, hunting and gathering of flora and fauna or any other environmental resources.
m. Be fully acquainted with OIL's oil spill emergency procedures and contingency plans.
n. Document and report immediately to OIL any incidents of environmental damage, any unforeseen activity or event, release of hydrocarbons, breaches of environmental regulations or complaint from local groups, organizations or individuals.
o. Establish, maintain and document any contact with authorities and other interested parties.
p. Be responsible for ensuring the acceptable disposal of waste in accordance with all local requirements and for activities conducted offshore and maintain a waste logbook.
q. Where Contractor is responsible for disposal of any waste produced or occurring because of its activities under the contract, all such disposals shall be in accordance with OIL standards, Legislation and best practice whether same is for hazardous waste or non-hazardous waste.
r. Contractor shall be responsible for ensuring that all necessary approvals or licenses are obtained and that any sub-contractors utilized for this purpose shall fully comply with such requirements.

s. Maintain a logbook wherein waste generated for the mud systems is recorded.

21.0 REPORTING PROCEDURES

a. Contractor shall comply with the following minimum reporting requirements. Contractor should also provide additional reports to the OIL representative at rig and OIL chemist at rig as may be requested during the work.
b. Daily mud reports on a daily basis to the Company representative and OIL chemist at rig and to the OIL Drilling Fluids Services section at Base.
c. End of Well Recap: A detailed well completion report shall be prepared and submitted within 14 days of the completion of well.
d. Complication Report: In case of any complications such as stuck pipe, lost circulation,

unusual caving, undesirable cuttings bed formations, the Contractor / onsite Drilling Fluid Engineer of Contractor shall notify the OIL's chemist immediately. A detailed draft report shall be submitted by the Contractor, within 24 hrs. of the incident (operations permitting), with full details and the reasons for the same and remedial measures/ recommendations that shall be followed in the present well as well in future wells to ensure safe and complication free drilling.

ANNEXURE-1

LIST OF LABORATORY EQUIPMENT PER RIG FOR LTSOBM BASED DRILLING FLUID

TABLE-1

Sl. No.	Items	Qty.
1	Mud Balance API grade, OFITE or Fann VG Meter 6 speed	2
2	API Filter Press	1
3	Marsh Funnel with Cup	4
4	API Mud Balance with Mud Cup	4
5	API Sand Content Apparatus	2
6	Hamilton Beach Mixer	2
7	Oil Water Retort Kit	1
8	Mud Filtrate Test Kit	1
9	Methylene Blue Test Kit	1
10	Glass Thermometer (50-500 degrees F.)	3
11	Hot Plate	1
12	pH Meter and pH strips	2pH Meter & 10 packets of pH Strips
13	Lubricity tester	1
14	Pressurized Mud Balance	1
15	Nephelometric Turbidity Unit (NTU) meter for turbidity test of brine	1
16	K+ ion Concentration test apparatus	1
17	Glassware, Reagents, Distilled water	As per Requirement
18	Hatch test apparatus for H2S with accessories	1
19	Glucometer for determination of glycol 5	1
20	Hydrometers (complete set)	1
21	HTHP Filtration Press c/w paper and accessories	1
22	Testing kit for Polyamine	
23.	Emulsion Stability Tester	1
24	Low Shear Viscometer Equivalent to Model LVT of Brookfield	1
25	One Turbidity meter (2100N –Hach) or equivalent	1

26	Silver Nitrate Solution (dark bottles) 0.282 N	3 X 500 ml
27	Silver Nitrate Solution (dark bottles) 0.0282 N	3 X 500 ml
28	Potassium Chromate Indicator Solution	100 ml
29	0.02 N Sulfuric Acid	3 X 500 ml
30	0.1 N Sulfuric Acid	500 ml
31	5N Sulfuric Acid	500 ml
32	Nitric Acid	500 ml
33	Phenolphthalein Indicator Solution	100 ml
34	Calcium Carbonate, precipitated, chemically pure	500 gm
35	Distilled Water	As required
36	Graduated Pipettes – 1 ml, 2 ml,5 ml & 10 ml	2 each
37	Titration Vessel 100 & 150 ml	2 each
38	Stirring Rod	4
39	0.02 N Hydrochloric Acid	3 x 250 ml
40	0.1 N Sodium Hydroxide Solution	3 x 250 ml
41	0.01 N Sodium Hydroxide Solution	3 x 250 ml
42	Barium Chloride Solution – 10%	3 x 500 ml
43	Versenate Solution	250 ml
44	Hardness Buffer Solution	250 ml
45	Hardness Indicator Solution	100 ml
46	Hatch test apparatus for H_2S with accessories	1
47	Methylene Blue Test Kit	1
48	Hydroxy Naphthol Blue	100 ml
49	Saturated Solution of Ammonium Oxalate	500 ml
50	Lead Acetate Paper Disks	25
51	Octanol Defoamer	500 ml
52	CO_2 Cartridges	12
53	Beakers (100ml, 250 ml and 500 ml)	4 each
54	Graduated Cylinders 10ml, 25 ml, 50ml,100ml, 250 ml and 500 ml	5 each
55	Syringes (1,2,5,10 ml)	10 each
56	Volumetric Pipettes (0.5,1,2,5,10ml)	2 each
57	Sodium Sulfite Solution	3 x 500 ml

58	1:1 Hydrochloric Acid Solution	3 x 500 ml
59	Starch Solution	250 ml
60	Potassium Iodide Solution – 5%	100 ml
61	Potassium Iodate Solution – .00625 N KIO3	100 ml
62	Refractometer for glycol %	1
63	Centrifuge (Electric) with centrifuge tubes capacity $10cm^3$	1
64	Hamilton Beach Mixer with cup	1
65	Digital balance	1
66	Glass Thermometers -10 deg. To 150 deg. C	4
67	Electronic Heated Stirring Plate	1
68	Boric acid	200 gms
69	Sodium Per Chlorate solution (150 g/100 cm^3 H_2O)	500 ml
70	Standard Potassium Chloride solution	100 ml
71	Hydrometers for Oil Density range	1 set
72	PHPA test Kit	1
73	PolyGlycol Test Kit	1
74	Methylene Blue Indicator	2 x 500 ml
75	Hydrogen Peroxide 3%	2 x 500 ml
76	Xylene	5 litres
77	Iso propyl alcohol	5 litres
78	Bromo Cresol green	100 ml
79	Cresol red indicator	100 ml
80	Stannic Chloride 0.5 M	100 ml
81	Volumetric flasks (100,250 and 500 ml)	5 each
82	Storage Bottles (white and Brown)	2 each
83	Titration vessel (150 ml)	4
84	Spray Bottles (for distilled water)	4
85	Dropper bottles (50 ml and 100 ml)	5 each

NOTE:

Contractor shall make available to Company in as much as it is not constrained by agreements of confidentiality, details of any ongoing research and development activities that it is undertaking, and which may be relevant to the company's operation.

LABORATORY EQUIPMENT / REAGENTS / GLASSWARE TO BE MAINTAINED PER RIG

TABLE-2

Chemicals and Reagents	Quantity
Distilled Water	25 litres
Buffer Solution pH 4.0	250 cc
Buffer Solution pH 7.0	250 cc
Buffer Solution pH 10.0	250 cc
Defoamer	100 cc
Sulphuric Acid 0.02N	3 x 500 cc
Sulphuric Acid 0.1N	500 cc
Sulphuric Acid 5N	500 cc
Hydrochloric Acid 0.1N	250 cc
Phenolphthalein Indicator	100 cc
Thymolphthalein Indictor	100 cc
Methyl orange Indicator	100 cc
Silver Nitrate Solution (dark bottles) 0.282N	3 x 500 cc
Silver Nitrate Solution (dark bottles) 0.0282N	3 x 500 cc
Potassium Chromate Indicator	100 cc
EDTA-Solution 0.02N	2 x 250 cc
Sodium Hydroxide Solution 0.1N	2 x 250 cc
Sodium Hydroxide Solution 1N	3 x 500 cc
Calver II Indicator (calcium)	250 g
Cresol Red Indicator	100 cc
Sodium Perchlorate Solution (150g/100cm3 H2O)	500 cc
Standard Potassium Chloride Solution	100 cc
Stannic Chloride 0.5M	100 cc
Hardness Indicator Solution	100 cc
Hardness Buffer Solution	250 cc
Methylene Blue Indicator	2 x 500 cc
Hydrogen Peroxide 3%	2 x 500 cc
Xylene	5 litres
IPA	5 litres

Bromo Cresol Green	100 ml
Any other reagents required during testing	

LIST OF GLASSWARES PER RIG

TABLE-3

Glassware	Quantity
Graduated Cylinders (10 ml & 25 ml)	5 each
Graduated Cylinders (50 ml)	2
Graduated Cylinders (250 ml & 500 ml)	1
Volumetric Pipettes (0.5, 1, 2, 5, 10 ml)	5 each
Graduated Pipettes (1, 2, 5, 10 ml)	5 each
Syringes (1, 2, 5, 10)	10 each
Volumetric Flasks (100, 250, 500 ml)	2 each
Beakers/Erlenmeyer (250, 400, 500 ml)	2 each
Storage Bottles (white)	2 each
Storage Bottles (Brown)	2 each
Titration Vessel (150 ml)	4
Spray Bottles – for distilled water (500 ml)	3
Dropper Bottles (50 & 100 ml)	4
Winchester bottles	As required
Jerry Cans- 5 lts.	As required

REFERENCE LABORATORY FOR TESTING DRILLING FLUID AND DRILLING FLUID FORMULATION

TABLE-4

S. No	DRILLING FLUID SYSTEM	REFERENCE LABORATORY FOR TESTING DRILLING FLUID AND DRILLING FLUID FORMULATION		
1	Spud Mud			
2	Lightly Treated Drilling Fluid Mud System			

3	KCL-PHPA-POLYAMINE-POLYMER Mud System			
4	HPHT Polymeric Mud System			
5	SOBM Mud System			

ANNEXURE-2

SCHEDULE OF RESPONSIBILITY FOR MATERIALS AND SERVICES

DESCRIPTION	PROVIDED BY		AT COST OF	
	Contractor	Company	Contractor	Company
1. Transportation of chemicals up to Shore Base at Kakinada	X		X	
2. Transportation of chemicals from Shore Base at Kakinada to the Drilling Location	X		X	
3. Provide access to utilize the Rig equipment required for preparation of drilling fluids.		X		X
4. Manpower required for assisting in preparation and handling of drilling fluids: a) Mud Engineers b) Operations Co-ordinator. c) Administrative and Logistics Support Staff	X		X	
d) Roustabouts		X		X
5. Transportation of Contractor's personnel from Heli base to rig and back		X		X
6. Laboratory equipment Required on rig for Determination of mud Parameters	X		X	
7. Accommodation of Contractor's personnel on Rig		X		X
8. Accommodation of Contractor's personnel on Shore	X		X	
9. Mud Lab Container		X		X

Exhibit 7

DRILL BITS & BI-CENTER BITS SUPPLY ON CONSIGNMENT BASIS

1.0 The scope of supply will include but not be limited to:

A. Supply bits, nozzles, bit breaker and associated accessories for drilling, suspension, abandonment and/or completion of wells.
B. Provide proposal for bits on consignment basis for each well based on bit engineering and optimisation.
C. Provide Bi-Center Bits (Optional)
D. Provide Odd Sized Drilling Bits (Optional)

2.0 TECHNICAL PROPOSAL

a. Tenderers are required to submit the complete product range available with full technical specifications and features.
b. Tenderers are required to submit a proposal for bits based on the tentative well plan This will include (but not be limited to):

i) Bit and nozzle selection.

ii) Hydraulics recommendations.

iii) Economics calculations.

c. Tenderers are encouraged to consider carefully the well data provided, and based on their area experience, if any, to make recommendations.

Note:

(i) Tenderers will be required to supply the bits as indicated under Table-I. The bits will be supplied to the Company on consignment basis with no re-stocking charges if returned unused. Payment will be made on actual consumption.

(ii) However, the Company solely at its discretion may retain maximum two numbers of each size unused bits at the end of the Contract.

Table 1: Company's Preferred Bits List During ONE RIG Operations

S.No	Bit Size	Bit Type	Remarks	Qty (each bit type)
A	26"	Roller Cone Milled tooth	IADC Code 1-1-5	2
B	17-1/2"	Roller Cone Milled Tooth and Roller Cone Insert	IADC Codes from 1-1-5 to 1-3-5, and from 4-1-5 to 4-3-7	6+6
	17-1/2"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	3
C	12-1/4"	Roller Cone Milled Tooth and Roller Cone Insert	IADC codes 1-1-7 to 2-1-7 from 4-1-5 to 6-1-7	10+10
	12-1/4"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	10
D	8-1/2"	Roller Cone Milled Tooth and Roller Cone Insert	IADC Codes from 1-1-6 to 2-1-7 and 4-1-5 to 6-3-7	10+10
	8-1/2"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	10
Call Out (Contingency)				
E	5-7/8"	Roller Cone Milled Tooth and Roller Cone Insert	IADC Codes from 2-1-7 to 3-1-7 and 4-3-5 to 6-2-7	2+2
	5-7/8"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	2

Table 2: Company's Preferred Bits List During TWO RIG Operations (Additional requirement)

Sl. No.	Bit Size	Bit Type	Remarks	Qty (each bit type)
A	26"	Roller Cone Milled tooth	IADC Code 1-1-5	1
B	17-1/2"	Roller Cone Milled Tooth and Roller Cone Insert	IADC Codes from 1-1-5 to 1-3-5, and from 4-1-5 to 4-3-7	2+2
	17-1/2"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	2

C	12-1/4"	Roller Cone Milled Tooth and Roller Cone Insert	IADC codes 1-1-7 to 2-1-7 from 4-1-5 to 6-1-7	5+5
	12-1/4"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	5
D	8-1/2"	Roller Cone Milled Tooth and Roller Cone Insert	IADC Codes from 1-1-6 to 2-1-7 and 4-1-5 to 6-3-7	5+5
	8-1/2"	Fixed Cutter (PDC) Bit (Matrix Body)	Recommended by the Contractor	5

Note – Contractor to refer to the following notes for bits;

For the above sizes: Any other recommendations from the Contractor

Nozzles: The complete range of nozzles available for the bit sizes mentioned above.

3.0 Below is some generic specification of the drill bits.

1) ROLLERCONE BITS – 26", 17-1/2", 12-1/4", 8-1/2" & 5-7/8"

a) API MONOGRAM AS PER API SPEC.7-1

b) Minimum Krev of around 800 -1000 for 12.1/4" and 650 - 800 for 8.1/2"

c) Twin seal or Metallic seal Bearing package - 17.1/2", 12.1/4", 8.1/2" and Premium Seal Bearing package for 5-7/8".

d) Centre jet feature to avoid bit balling – 17-1/2", 12-1/4", 8-1/2"

e) Full tooth hard facing on each tooth (Cutting structure and gauge) - 17.1/2", 12.1/4", 8.1/2" & 5-7/8".

f) Raised tungsten carbide inserts on shirttail/arm and tungsten carbide inserts leg back protection– 17-1/2", 12-1/4", 8-1/2" & 5-7/8".

2) PDC BITS – 17-1/2", 12-1/4", 8-1/2" & 5-7/8"

Matrix Body

a) Predominantly 19 mm cutters for 17.1/2", 19/16 mm cutters for 12.1/4", 16/13 mm cutters for 8.1/2" and 13mm cutters for 5-7/8".

b) New generation type premium PDC cutters with high thermal mechanical integrity

c) Gauge protection features (Thermally stable Diamond inserts on the gauge)

d) Low torque feature (Depth of cut control elements at every blade)

e) Low exposure cutter

f) Impact arrestors

g) Back reaming cutters on gauge pads on each blade

h) Spiral gauge pad

i) Sufficient Junk Slot area for proper hole cleaning

3) BI-CENTER BITS (ON OPTIONAL BASIS)

Nominal Section	Required Bi-Center Bit Size	API Connection	Quantity Required
17-1/2" Section	17" x 20"	6-5/8" REG / 7-5/8" REG	3
14-1/2" Section	14-1/2" × 17-1/2"	6-5/8" REG	6

Below is some generic specifications of bi-center bits:

1. Bi-center drill bits shall be designed for drilling a pilot hole and simultaneously enlarging the borehole to a larger diameter in a single run.
2. Capable of drilling out cement, float equipment, and casing shoes. Should be capable of being used in directional and vertical wells.
3. Suitable for use with rotary drilling and positive displacement motors (pdm) and compatible with directional drilling tools.
4. Equipped with PDC cutters (premium/deep-leached/thermally stable types), ranging typically from 13 mm to 16 mm.
5. Spiral or optimized blade configuration for improved stability and gauge protection with wear-resistant elements.
6. Tool design shall be field-proven and validated for simultaneous drilling and reaming operations.
7. Supplier shall provide relevant performance data upon request and the bi-center bits offered shall meet industry standards.

4.0 SUPPLY OF ODD SIZE DRILLING BITS (ON OPTIONAL BASIS)

a) Contractor shall submit detailed brochure of offers of following odd size bits from reputed manufacturers mentioned below within 7 days of issuance of Notice so that OIL can choose the best among the offered bits to ensure suitability for the Contract.

b) Contractor to provide following odd size bits as & when required on consignment basis:

Sl.	Item	Estimated Quantity
1	14-3/4" PDC bit 16mm cutter minimum 5 blades	2
2	14-3/4" Roller Cone bit, 115	1
3	10-5/8" PDC bit 16mm cutter minimum 5 blades	2
4	10-5/8" Roller Cone bit, 115	1

Leftover Odd size bits: Further, at the end of contract, odd size bits which have been ordered by the OIL and provided on consignment basis are left unutilized, OIL reserves the right to purchase the leftover odd size at the contractual rate.

5.0 Personnel

Tenderers will be required to provide the following personnel:

A qualified, skilled and experienced Bit engineer in India at no cost to Company. The engineer shall provide bit engineering and optimisation as required by Company for each well in addition to assisting with logistics.

6.0 Reporting

The successful Contractor will be required to adhere to the following reporting requirements:

On receipt of drilling prognosis, to submit a bit proposal for each well including nozzles and hydraulics recommendation.

Availability of the proposed bits and nozzles in stock in India or in Middle East every fortnight.

7.0 Logistics

Company at its discretion may initially order all or in separate lots the bits, as deemed necessary, for the upcoming drilling campaign.

Contractors are required to mobilise all their bits, nozzles etc to the designated Shore Base at Kakinada.

Contractor shall provide all necessary import documents for all bits supplied to Company.

Unused Bits of all sizes will be re-exported by the Contractor at the end of the Contract and intimate the Company accordingly.

8.0 Technical Support

The tenderer will be required to demonstrate product suitability by including (if appropriate) a list of current customers and contact names in the region.

The tenderer will be required to demonstrate adequate technical and logistic support to be able to work in India.

The tenderer will be required to demonstrate adequate QA/QC procedures/systems in their manufacturing processes and will be required to present material analysis/mill/test certification (in triplicate) for all material supplied.

The tenderers should supply details and location of their base facilities in the region - as pertains to the Company operation.

The successful Contractor will be required to nominate a contact reference in case of technical problems.

The contractor should be capable of providing technical assistance in selecting the right bit after each bit run. The contractor should also be capable of designing and manufacturing customized drill bits, if required, based on the performance in these formations.

All bits supplied must be new, less than 1 year old (from the date of issue of notice) and have an adequate shelf life for the duration of the project.

9.0 List of Vendors:

1. Smith
2. Baker Hughes
3. Halliburton
4. NOV
5. Ulterra

10.0 Delivery Point:

At Shore Base, Kakinada, Andhra Pradesh, India on DDP destination basis.

Delivery Schedule: The Goods covered in this document are to be delivery at the designated delivery point as advised by Company on staggered basis.

Exhibit 8

LINER HANGER SERVICES

1.0 Scope of Supply shall include but not be limited to the Supply of liner hanger equipment and associated accessories for a minimum pressure rating of 10,000 psi.

2.0 EQUIPMENT DESCRIPTION:

The Bid Contractor shall supply the following equipment:

2.1 Liner hanger system (Solid Body Design) with the following specification:

16", 84 lb/ft, P-110, BTC connection x 20" 133 lb/ft, X-56 (Multistart connection)

Hanger system to be furnished with a ± 5m PBR extension and integral liner top packer. The system should be capable of tying back and consisting of the following items but not limited to the list below:

a) To suit liner length of ± 1000 m.
b) Liner hangers should be of the rotational hydraulic set variety, c/w Integral or non-integral type weight set mechanical packer.
c) Liner hangers should be supplied with a complete set of cementing, running and setting accessories for deep water operations.
d) Landing collars with Premium connection.
e) Float collars (double valve) with Premium connection.
f) Float / Reamer shoes (double valve) with Premium connection.
g) 16" Wiper plugs with anti-rotational dogs.
h) 4-1/2" Wiper plugs with anti-rotational dogs
i) Drill pipe darts.
j) Setting balls (If any) to pass through drill pipe and HWDP (pipe size would be advised to the successful bidder).
k) Crossovers from running tool to drill pipe.
l) Other accessories specific to contractors proposed equipment
m) Liner hangers should be proposed with integral lap packers, capable of withstanding 5000psi differential pressure. A separate Tie back packer, seal nipple and seal orifice float collar should be proposed as back up.

n) All running and retrieving tools necessary to install the liner hanger system on rental basis.

o) All running and retrieving tools necessary to install a separate tieback packer on rental basis.

p) A cement manifold including flag sub and ball dropping sub capable of simultaneous cementation and hoisting operations on rental basis.

q) All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote.

r) Specialized handling equipment required for running the Contractors proposed equipment.

s) All spares and consumables necessary to run, set and retrieve the proposed system on consignment or outright purchase basis, as applicable.

t) All hand tools necessary for the service engineer to perform his duties without depending on other contractors' equipment.

u) Contractor to quote the rates for conventional, anti-rotating type float equipment for the liner hanger.

2.2 Rotating Liner hanger system (Solid Body Design) with the following specification:

7", 32 lb/ft, V-150, Premium connection x 9-5/8" 47 lb/ft, P-110/9-7/8" 62.8 lb/ft, LS-140, (Premium connection)

Hanger system to be furnished with a ± 5m PBR extension and integral liner top packer. The system should be capable of tying back and consisting of the following items but not limited to the list below:

a) To suit liner length of ± 1800 m.

b) Liner hangers should be of the rotational hydraulic set variety, c/w Integral or non-integral type weight set mechanical packer.

c) Liner hangers should be supplied with a complete set of cementing, running and setting accessories for deep water operations.

d) Landing collars with Premium connection

e) Float collars (double valve) with Premium connection

f) Float / Reamer shoes (double valve) with Premium connection
g) 7" Wiper plugs with anti-rotational dogs
h) 4-1/2" Wiper plugs with anti-rotational dogs
i) Drill pipe darts
j) Setting balls (If any) to pass through drill pipe and HWDP (pipe size would be advised to the successful bidder)
k) Crossovers from running tool to drill pipe
l) Other accessories specific to contractors proposed equipment
m) Liner hangers should be proposed with integral lap packers, capable of withstanding 5000psi differential pressure. A separate Tie back packer, seal nipple and seal orifice float collar should be proposed as back up.
n) All running and retrieving tools necessary to install the liner hanger system on rental basis.
o) All running and retrieving tools necessary to install a separate tieback packer on rental basis.
p) A cement manifold including flag sub and ball dropping sub capable of simultaneous cementation and hoisting operations on rental basis.
q) All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote.
r) Specialized handling equipment required for running the Contractors proposed equipment.
s) All spares and consumables necessary to run, set and retrieve the proposed system on consignment or outright purchase basis, as applicable.
t) All hand tools necessary for the service engineer to perform his duties without depending on other contractors' equipment.
u) Contractor to quote the rates for conventional, anti-rotating type float equipment for the liner hanger.

2.2 Rotating Liner hanger system (Solid Body Design) with the following specification:

4-1/2", 15.1 lb/ft, P-110, Premium connection x 7" 32 lb/ft, V-150, Premium connection on Call Out Basis

Hanger system to be furnished with a ± 4m PBR extension and integral liner top packer. The system should be capable of tie back and consist of following items but not limited to the list below:

a) To suit liner length of ± 550 m.
b) Liner hangers should be of the rotational hydraulic set variety, c/w Integral or non-integral type weight set mechanical packer.
c) Liner hangers should be supplied with a complete set of cementing, running and setting accessories for Drill-ship rig operations.
d) Landing collars with premium connections.
e) Float collars (Single/double valve) with premium connections.
f) Float / Reamer shoes (double valve) with premium connections.
g) 4-1/2" Wiper plugs with anti-rotational dogs
h) Drill pipe darts suitable for rig d/pipe (Size of d/pipe will be provided after finalizing drilling rig).
i) Setting balls (If any) to pass through drill pipe/HWDP.
j) Crossovers from running tool to drill pipe with 3-1/2" IF connections.
k) Other accessories are specific to Bidders' proposed equipment.
l) Liner hangers should be proposed with integral lap packers, capable of withstanding 5000psi differential pressure.
m) All running and retrieving tools are necessary to install the liner hanger system on rental basis.
n) A rotating cement manifold including flag sub and ball dropping sub capable of simultaneous cementation and hoisting operations on rental basis.
o) All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote.
p) Specialized handling equipment required for running the Bidders proposed equipment.

Material Specification

i) All threaded tubulars will be adequately greased and fitted with suitable protectors to cover the entire length of the thread - to exclude water and dirt for a minimum of one year - in accordance with current API specifications.

ii) All tubulars will be externally coated (where appropriate) with a proprietary compound in accordance with current API specifications.

iii) All tubulars will be painted (where appropriate) with the size, weight, thread, OIL order number etc.

iv) All shear pressure pin sizes and number of pins fitted in the liner hanger system and landing collar to be clearly specified.

v) The Contractor must design the liner hanger equipment as per the temperature and other specified provided above under provisional well details.

vi) In the event that the required grade/material is not available, alternative tubulars with equivalent mechanical properties can be offered but OIL will reserve the right to evaluate and order this equipment at their own discretion.

3.0 SCOPE OF SERVICES

3.1 Personnel:

Contractor shall provide a qualified, skilled and experienced field engineer assigned to Company operation, with a minimum of five years' experience in running liner hanger equipment, out of which three years must be on a floater rig. Personnel will be required on a call out basis. Company shall give a maximum of 07 days' notice. The Contractor is required to mention the maximum time an individual is allowed to stay on the rig as per the Contractors company policy.

The contractor shall submit CV of the above personnel to the company within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for-Company's approval. The Contractor shall not deploy its personnel unless cleared by the Company.

3.2 Inspection, loading and dispatch:

Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company as per Clause No: 8.0 of SCC and at any time during the duration of the contract.

Contractor is required to mobilise all its equipment, tools etc to the Contractor's OCTG Yard at Kakinada, India.

All lifting and load bearing equipment of the Contractor shall be certified prior to shipment to the drilling unit and all relevant certifications shall be available for inspection.

Contractor's personnel should be present at Shore Base at Kakinada, India during loading and unloading of their equipment/material to and from Marine Vessels.

3.3 Reporting:

The successful Contractor shall adhere to the following reporting requirements:

a. To maintain an up-to-date inventory of all tools and equipment held on the wellsite and the Shore base and to submit a report prior to and after running the liner hanger in the well.
b. To prepare a detailed plan for running and setting liner hanger for each well.
c. To perform a detailed post job evaluation after each liner running operation. This should be submitted to the Company Representative within 24 hours of completion of the job.
d. To perform a detailed recap of the liner running operation at the end of each well. The recap should include as a minimum the following:

    i. An evaluation of each operation performed on the well including recommendations to improve future performance

    ii. A detailed review of any problems encountered including any recommendations to avoid reoccurrence

    iii. A detailed cost breakdown and material reconciliation of equipment used.

This recap should be submitted to Company within 10 days at the end of operations on the well.

3.4 Technical Proposal

Contractor shall submit the following documents in its Tender.

a. Full technical specifications for all sale and rental equipment. This shall include (but not be limited to):
    i. Mechanical limitations of the equipment.

ii. Running and retrieving programs with suggested procedures and practices.

b. Contractor shall demonstrate product suitability by including a list of current customers and contact names in the region.

c. Contractor shall demonstrate adequate technical and logistic support to be able to work in India.

d. Contractor shall demonstrate adequate QA/QC procedures/systems in their manufacturing processes and should be able to present material analysis/mill/test certification (in triplicate) for all material offered.

e. Contractor shall specify the details and location of their base facilities in the region - as pertains to the Company operation.

f. The successful Contractor shall nominate a focal point based in the region for the purpose of coordination related to call out engineer, import and re-export of the liner hanger and related equipment.

g. The successful Contractor, on receipt of the firm quantities of liner hanger equipment at Contractor's OCTG Yard will mobilize a service engineer at his own cost to check all the liner hanger equipment and confirm that the item received at OCTG Yard are correct and are as per the order.

h. Detail drawing along with complete technical description of all the liner hanger system to be provided.

i. Detail drawings indicating connection and dimensions for clean out tools.

j. Company shall place order for complete set of consumables as detailed in Table-A Equipment Details, to be delivered at Contractor's OCTG Yard at Kakinada, India on DDP destination basis. Unused liner hanger system consumables, as per quantities mentioned in the price proforma, shall be returned to Contractor at conclusion of drilling campaign. Contractor must submit buy-back charges (minimum 30% of the quoted rate) for the unused consumables.

Table-A EQUIPMENT DETAILS – CONSUMABLE BASIS – During 1 Rig operation

Sl. No.	Description	Quantity/Set	
		Firm	Optional
1	16", 84 lb/ft, P-110, BTC Liner hanger system (Solid Body Design) c/w hydraulic set hanger, ± 5m PBR extension and Integral or non-integral type weight set mechanical liner top packer with premium connections	4	1

2	16", 84 lb/ft, P-110 BTC Tie back packer assembly compatible with above liner hanger system	4	1
3	16", 84 lb/ft, P-110 BTC Tie back seal nipple/assembly with Premium connections	4	1
4	Landing collar with 16", 84 lb/ft, P-110 BTC Box X Pin	4	1
5	Float collar with single poppet valve with 16", 84 lb/ft, P-110 Box X Pin	4	1
6	Float shoe with dual poppet valves, side ports, cement nose with 16", 84 lb/ft, P-110 BTC box connection	4	1
7	Liner wiper plug – 16", 84 lb/ft, P-110 BTC casing	4	1
8	Drill Pipe Pump Down Plug – to pass through drill pipe Successful Contractor will be notified of drill pipe weight, grade and tool joints.	4	1
9	7", 32 lb/ft, V-150, Premium Connection Rotating Liner hanger system (Solid Body Design) c/w hydraulic set hanger, ± 5m PBR extension and Integral or non-integral type weight set mechanical liner top packer with premium connections	4	1
10	7", 32 lb/ft, V-150, Premium Connection Tie back packer assembly compatible with above liner hanger system	4	1
11	7", 32 lb/ft, V-150, Premium Connection Tie back seal nipple/assembly with Premium connections	4	1
12	Landing collar with 7", 32 lb/ft, V-150 premium connections Box X Pin	4	1
13	Float collar with single poppet valve with 7", 32 lb/ft, V-150 premium connections Box X Pin	4	1
14	Float shoe with dual poppet valves, side ports, cement nose with 7", 32 lb/ft, V-150premium box connection	4	1
15	Liner wiper plug – 7", 32 lb/ft, V-150casing	4	1
16	Drill Pipe Pump Down Plug – to pass through drill pipe Successful Contractor will be notified of drill pipe weight, grade and tool joints.	4	1

17	4-1/2" x 15.1 lb/ft, P-110, Premium connection Rotating Liner hanger system (Solid Body Design) c/w Mechanical (rotating) set hanger, ± 4m PBR (10 feet to 15 feet) extension and integral weight set liner top packer with Premium connections	3	1
18	4-1/2" x 15.1 lb/ft, P-110, Premium connection Tie back packer assembly compatible with above liner hanger system	3	1
19	4-1/2" x 15.1 lb/ft, P-110, Premium connection Tie back seal nipple/assembly	3	1
20	Landing collar with 4-1/2" x 15.1 lb/ft, P-110 Premium connections Box X Pin	3	1
21	Float collar with single poppet valve with 4-1/2" x 15.1 lb/ft, P-100, Premium connections Box X Pin	3	1
22	Float shoe with dual poppet valves, side ports, cement nose with 4-1/2" x 15.1 lb/ft, P-110, Premium connection	3	1
23	Liner wiper plug – 4-1/2", 15.1 lb/ft, P-110 casing	3	1
24	Drill Pipe Pump Down Plug – to pass through drill pipe Successful Contractor will be notified of drill pipe weight, grade and tool joints.	3	1

Table-B LINER HANGER EQUIPMENT - RENTAL BASIS

Item	Description of rental tool	Qty
	For 16" Liner	
1	Running / Setting Tool for Liner hanger (retrievable pack-off bushings is preferred)	1 + 1(backup)
2	Tie back Packer Running Tool (to be provided only if it is different than S. No. 1 above)	1 + 1(backup)
3	Combination PBR Polish Mill/clean out blade mill (provide connections details)	1 + 1(backup)
4	Necessary crossovers to run the (PBR) polish mill with combination string	Lot (with details of all the x/overs)

	a) Bidder to furnish details Lot (with details of all the x/overs)	
5	All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to 5-7/8", 4-1/2" IF/3-1/2" IF Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote	1
	For 7" Liner	
6	Running / Setting Tool for Liner hanger (retrievable pack-off bushings is preferred)	1 + 1(backup)
7	Tie back Packer Running Tool (to be provided only if it is different than S. No. 1 above)	1 + 1(backup)
8	Combination PBR Polish Mill/clean out blade mill (provide connections details)	1 + 1(backup)
9	Necessary crossovers to run the (PBR) polish mill with combination string a) Bidder to furnish details Lot (with details of all the x/overs)	Lot (with details of all the x/overs)
10	All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to 4-1/2" IF/3-1/2" IF Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote	1
	For 4-1/2" Liner - Call Out basis	
11	Running / Setting Tool for Liner hanger (retrievable pack-off bushings is preferred)	1 + 1(backup)
12	Tie back Packer Running Tool (to be provided only if it is different than S. No. 1 above)	1 + 1(backup)
13	Combination PBR Polish Mill/clean out blade mill (provide connections details)	1 + 1(backup)

14	Necessary crossovers to run the (PBR) polish mill with combination string a) Bidder to furnish details Lot (with details of all the x/overs)	Lot (with details of all the x/overs)
15	All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to 4-1/2" IF/3-1/2" IF Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote	1
	Cementing Head for Liner cementing	
16	Rotating Cement head with manifold for Top Drive Rig for cementing 16", 7" and 4-1/2" Liners	1 + 1(backup)

Table-C Personnel

S.No.	Description	Unit Of Measurement	Quantity
1	**Liner Hanger Engineer**	Number	1 (On call out basis)

Table-D: EQUIPMENT DETAILS, ADDITIONAL CONSUMABLES – During 2 Rig operation

Sl. No.	**Description**	**Quantity/Set**	
		Firm	**Optional**
1	16", 84 lb/ft, P-110, BTC Rotating Liner hanger system (Solid Body Design) c/w hydraulic set hanger, ± 5m PBR extension and Integral or non-integral type weight set mechanical liner top packer with premium connections	3	1
2	16", 84 lb/ft, P-110, BTC Tie back packer assembly compatible with above liner hanger system	3	1
3	16", 84 lb/ft, P-110, BTC Tie back seal nipple/assembly with Premium connections	3	1

4	Landing collar with 16", 84 lb/ft, P-110, BTC Box X Pin	3	1
5	Float collar with single poppet valve with 16", 84 lb/ft, P-110, BTC connections Box X Pin	3	1
6	Float shoe with dual poppet valves, side ports, cement nose with 16", 84 lb/ft, P-110, BTC box connection	3	1
7	Liner wiper plug – 16", 84 lb/ft, P-110, BTC casing	3	1
8	Drill Pipe Pump Down Plug – to pass through drill pipe Successful Contractor will be notified of drill pipe weight, grade and tool joints.	3	1
9	7", 32 lb/ft, V-150 Premium Connection Rotating Liner hanger system (Solid Body Design) c/w hydraulic set hanger, ± 5m PBR extension and Integral or non-integral type weight set mechanical liner top packer with premium connections	3	1
10	7", 32 lb/ft, V-150 Premium Connection Tie back packer assembly compatible with above liner hanger system	3	1
11	7", 32 lb/ft, V-150 Premium Connection Tie back seal nipple/assembly with Premium connections	3	1
12	Landing collar with 7", 32 lb/ft, V-150 premium connections Box X Pin	3	1
13	Float collar with single poppet valve with 7", 32 lb/ft, V-150 premium connections Box X Pin	3	1
14	Float shoe with dual poppet valves, side ports, cement nose with 7", 32 lb/ft, V-150 premium box connection	3	1
15	Liner wiper plug – 7", 32 lb/ft, V-150 Premium Connection casing	3	1
16	Drill Pipe Pump Down Plug – to pass through drill pipe Successful Contractor will be notified of drill pipe weight, grade and tool joints.	3	1

Table-E: ADDITIONAL LINER HANGER EQUIPMENT - RENTAL BASIS

(During 2 Rig Operation)

Item	Description of rental tool	Qty
	For 16" Liner	
1	Running / Setting Tool for Liner hanger (retrievable pack-off bushings is preferred)	1
2	Tie back Packer Running Tool (to be provided only if it is different than S. No. 1 above)	1
3	Combination PBR Polish Mill/clean out blade mill (provide connections details)	1
4	Necessary crossovers to run the (PBR) polish mill with combination string a) Bidder to furnish details Lot (with details of all the x/overs)	Lot (with details of all the x/overs)
5	All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole equipment with all necessary cross over to 5-7/8", 4-1/2" IF/3-1/2" IF Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote	1
	For 7" Liner	
6	Running / Setting Tool for Liner hanger (retrievable pack-off bushings is preferred)	1
7	Tie back Packer Running Tool (to be provided only if it is different than S. No. 1 above)	1
8	Combination PBR Polish Mill/clean out blade mill (provide connections details)	1
9	Necessary crossovers to run the (PBR) polish mill with combination string a) Bidder to furnish details Lot (with details of all the x/overs)	Lot (with details of all the x/overs)
10	All mills, stabilizers, dressing tools and other clean out tools required to repair, clean out, dress and refurbish down hole	1

	equipment with all necessary cross over to 4-1/2" IF/3-1/2" IF Drill pipes on rental basis. The detail drawing of all dressing tools along with dimensions and connections to be provided with the quote	
	Cementing Head for Liner cementing	
11	Rotating Cement head with manifold for Top Drive Rig for cementing 16", 7" and 4-1/2" Liners	1

Table-F Personnel (Required for 2nd Rig)

S.No	Description	Unit Of Measurement	Quantity
1	**Liner Hanger Engineer**	Number	1 (On call out basis)

Exhibit 9

9. MUD LOGGING SERVICES

1. CONTRACTOR'S EXPERIENCE

1.1. Contractor Should have a minimum of 5 years of experience in providing Mud Logging Services to E&P companies/ drilling companies including 3 years in floater rigs and experience of at least 2 Wells on a floater rig.

1.2. The Contractor should also have executed at least one Contract for mudlogging on a floater rig in the last 7 years to be reckoned from the original bid closing date.
Towards the same, the bidder needs to submit, along with the bid, the relevant supporting documents in respect of the satisfactory execution of each of the contracts.

2. SPECIFICATIONS FOR MUD LOGGING UNIT

2.1 Mud logging Services is to be provided through an online computerized Mud Logging Unit (MLU) for continuous online data acquisition, display process and storage of various drilling, mud, Gas, Geological, and calculated parameters. The unit is required to be skid mounted, fully insulated dual air-conditioned, low noise pressurized, equipped with safety & hazard resistant kits (electrical fire extinguisher, gas masks with oxygen cylinder etc. in adequate quantity), with wall mounted LCD or LED monitors, PC/Printers/other peripherals and having sufficient working place for technical personnel of both the contractor and company to work safely inside the unit. The unit should be installed with LEL gas detector, smoke, fire, H2S detectors, explosive proof lamp with an automatic shutdown system in case of loss of unit pressure or presence of any combustible gas. The Local Exhaust Ventilation (LEV) or Fume Extractor and manual circuit breakers so that it can tackle any emergency situations. The unit should be certified for placement in Zone 1 hazardous area. The unit should not be more than **10 (ten) years old** and must be latest ISO/DNV certified as on the original bid closing date. Bidder to submit relevant documents in support of this vintage clause.

2.2 The bidder must be an **ISO/DNV certified (ISO:9001, 14001, 18001/45001, 27001, 29001)** or equivalent company in terms of quality, health safety & environment management, data security and the ISO certification must be valid during the entire contract period. OMR and all oilfield HSE standards as per Govt. of India directives need

to be fulfilled. All field mounted sensors to be intrinsically safe and connected via explosion proof junction boxes meeting safety standard for operating in hazardous area as per API and OMR norms. All electrical wiring and fixtures, breakers, relays, plugs, earthing etc. conform to industrial regulations & standards (Necessary certificates to be provided). Note: The bidder must provide written assurance along with the bid that all such sensors and junction boxed shall comply the standard defined by Director General of Mines Safety (DGMS).

2.3 The software should be able to input/output in standard formats such as ASCII/LIS/LAS and be able to generate "composite Logs" by combining MLU data and basic wireline logs from LWD such as gamma ray, resistivity, neutron-density, sonic, formation pressure etc. and the same shall be available to stream as real-time WITSML. The software should have the ability to generate periodic work summary repots and a standard "completion report". The hardware should be adequate /compatible with desired products. To provide suitable paper plotters (A 4 banner paper) for displaying various sensor signals and parameters.

2.4 The Mud Logging Unit shall be suitable for floating, anchor moored drilling unit or DP-3 Drillship Rigs of water depth of 3,000m or more.

2.5 The bidder shall provide all equipment, materials, consumables, literature etc. in the Mud Logging Unit and shall ensure good industrial quality. The Contractor at its cost shall provide suitable accessories and mountings for all sensors and detectors and to be compatible with provisions of the rig. Contractor to ensure providing MLU equipment and sensors as per the appropriate safety standards and certifications at par with the rig's requirement.

2.6 The bidder must provide environmentally suitable Mud Logging Unit complete with all intrinsically safe and explosion proof motors, ATEX certified (or equivalent) sensors and detectors having digital display, audio/visual alarm.

Dimension: Approx. 20 feet X 9 feet X 8.5 feet

Material: G.I Sheet, preferably corrugated with internal laminates, moth proof coating and vinyl flooring, skid mounted/steel frame base, suitable for lifting by Crane.

Weight: 13 tons approx. or as per ISO standard

2.7 Details of all certifications for the unit and any lifting equipment to be provided in advance of mobilization.

2.8 Power Supply: Company shall provide power to the MLU from the drilling rig. Since availability of stabilized power supply from rig is a big constraint because of high voltage spikes and harmonics during operation, Contractor is required to provide necessary equipment etc. to handle the spikes and harmonics. MLU is required to be equipped with isolation transformer and online UPS system having modern filter circuits (linear power supply for all the sensitive equipment connected with MLU) to eliminate spikes and harmonics during operation. Company will not be responsible for damage to any equipment/computer system of the MLU due to spikes and harmonics arising out of power supplied from rig. The MLU must be equipped with 3-phase transformer, isolation transformer etc. as required to obtain required power output and to take care of high voltage spikes. Mud logging unit should have 100% redundancy for:

A. Data acquisition, FID gas chromatography, FID total hydrocarbon gas detection, degasser, critical sensors such as hook load, standpipe pressure, draw works, SPM, RPM, mud flow out.

B. Data storage in at least two locations in the unit.

2.9 Operations: The Mud logging unit will need to be operated round the clock at drilling site for uninterrupted recording of various drilling, lag time and mud parameters.
2.10 Mud logging services shall be applicable for all planned hole sections including contingency 5-7/8" hole size.

3. MUD LOGGING ACTIVITIES

Contractor shall provide the following mud logging work in real time as outlined below, but not limited to the following.

1. Collection, examination & description of mud cuttings and cores including fluorescence and cut.
2. Monitoring of all Drilling parameters, Mud parameters, Flow Line gases and advise on any abnormal behaviour.
3. Prepare Geological Mud log, Drilling log, Time Log and Gas Log.
4. Provide Mud log outputs regularly and as desired by OIL well site geologist.
5. Carry out D-Exponent plotting, calcimeter and shale density analysis/ measurements.
6. Collection of LWD, MWD, Wire line data and preparation of Composite logs.

7. Aggregation and Transmission of all mud logging unit data in REAL TIME in WITSML version to OIL offices mentioned in scope of work.
8. Calibrate and maintain all peripherals, sensors and equipment
9. Assist OIL's well site geologist as & when requested.
10. Monitoring of flow studies & collections of Oil/Gas/Water samples during Production testing.
11. Finger printing
12. Advance well control
13. PPFG prediction

To the extent required and requested by OIL, Contractor shall furnish and maintain the necessary Equipment, Personnel and supplies as described in Scope of Work.

4. SERVICE SPECIFICATIONS

The Successful Contractor shall provide Mud Logging Unit and services (Drilling and Testing mode) along with required manpower, equipment and software in full operating condition suitable to work in offshore locations of Mahanadi and KG Basins, India. Mud Logging should be deployed at exploratory drilling well sites for Drilling Safety and Geological Surveillance. The set-up of mudlogging unit should be able to acquire, display, process, store as well as transmit the real-time data. Contractors will, as a minimum, adhere to the latest international standards and standard operating procedures. The Contractor should Rig up and calibrate all equipment, gas detection panels and sensors and provide mud logging services including but not limited to the following:

Drilling Safety:

1. Continuous monitoring of Drilling parameters, Mud volumes, Mud Flow, Mud properties; and report any abnormal behaviour of drilling & Mud parameters.
2. Maintain pit volume sheets, trip sheets and kill sheets. Provide summary of mud losses and gains regularly via daily reports.
3. Continuous Monitoring and reporting of well hydraulics using Mudlogging hydraulics package calculating pressure drops in mud circuit, jetting velocity, bottom dynamic pressure and Equivalent Circulation Density.

4. Immediate detection and reporting of high gas shows, connection gases, caving's, influxes, Mud losses, vibrations, mechanical failure and pressure changes in drill string through observed drilling parameters.

4.2 Geological Surveillance:

1. Collection, examination and description of drill cuttings / core chips including fluorescence using standard color charts and procedures as per Depth Data & Drilling Policy (DDDP) provided by Company.
2. All Drill cutting and fluids (gas, oil, water, mud, etc.) samples collected at the wellsite while drilling/logging or production testing operations to be labelled, packaged robustly using specified storage and packaging material and kept ready for onward transportation to Company warehouse, ensuring that the samples are protected from damage as much as possible during transport.
3. Carry out calcimetry & Shale density and report same with routine reports and on the Mud log.
4. Compute, Monitor and regularly report Pore Pressure and Fracture Pressure using Drilling parameters, D-Exponent and shale density data while drilling.
5. Assist Company representatives in recovery, sampling, description and packaging of any conventional core / side wall core taken during the drilling and wireline logging operations of the well.

4.3 Gas Data Acquisition and Interpretation:

1. Continuous recording and monitoring of Gas data recorded through Total Hydrocarbon Gas Detector, Gas chromatograph and CO2 detector.
2. IsoTube samples to be collected at all the significant gas show in consultation with Company representative.
3. Identification and reporting connection gases, recycled gases and trip gases.
4. QC, Analysis and Interpretation of total gas, chromatograph data (C1-C5) acquired while drilling along with background gases.

4.4 Data Reporting & Transmission:

1. Regularly prepare and provide daily Reports, data and logs as well as Final Well Report as specified under Paragraph 6 about Reporting.

2. Collection of LWD-MWD and wireline data; preparation of Composite Logs after integrating LWD/wireline data with mudlogging data.
3. Transmission of Real-time data from wellsite to Company office including supply, installation, operation and maintenance of necessary hardware/ software interface required for data transmission.

4.5 **Mudlogging Equipment:**

The mud logging unit provided by the service provider should be equipped with but not limited to the following:

Sl. No.	Equipment Description	Quantity*
A	**MUDLOGGING UNIT (One Unit Each Required on Each Drillship)**	
A1	Certified for placement in Zone 1 Hazardous area	2
A2	Cabin Insulation	
A3	Air-conditioning	
A4	Pressurization System	
A5	LEL Gas Detector	
A6	Smoke Detectors	
A7	H_2S Detectors	
A8	Automatic shutdown	
A9	UPS with minimum 30 minutes of power backup	
EACH MUD LOGGING UNIT SHOULD HAVE BELOW ITEMS		
B	**SENSORS WITH EXPLOSION PROOF JUNCTION BOXES**	
B1	Hook Position / Depth	1
B2	Hook Load / Weight on Bit	1
B3	Rotary Speed (RPM)	1
B4	Rotary Torque	1
B5	Standpipe Pressure (15K)	1
B6	Cementing Unit Pressure (15K)	1
B7	Casing Pressure (15K)	1
B8	Pump Stroke Counter (SPM)	3

B9	Pit Level Sensors (Sonic)	10
B10	Mud Density IN & OUT	2
B11	Mud Temperature IN & OUT	2
B12	Mud Conductivity IN & OUT	2
B13	Flow Out Rate	1
C	**GAS DETECTION SYSTEM**	
C1	Explosion proof Electric or Pneumatic Constant Volume Degasser	1
C2	Total Hydrocarbon Gas Detector	1
C3	Gas Chromatograph	1
C4	99% Pure Methane mixture cylinders (Certified) with connectors and injection lines for Total Hydrocarbon Gas Detector Calibration (At least 3 concentrations)	2
C5	C1-C5 mixture Gas cylinders (Certified) with connectors and injection line for Chromatograph Calibration (At least 2 concentrations)	2
C6	Air Compressor / Hydrogen Generator / Hydrogen or Helium Cylinder for Carrier Gas	1
C7	CO_2 Detector	1
C8	H_2S Sensors with external alarm (visual and audible)	4
D	**DATA ACQUISITION & REPORTING**	
D1	Data Acquisition Panel	1
D2	Set of Computers to Acquire, Process, Analyze and Transmit Realtime mudlogging data.	1
D3	Offline computers for Data Engineer and Mud logger	1
D4	Licensed versions of Mudlogging Software suite capable of Acquiring, processing, Analyzing and Transmitting mudlogging data in Real-Time, including but not limited to the following modules: 1. Data Acquisition 2. Sensor & Gas Panel Calibration	1

	3. Hydraulic Package 4. Stick & Slip Analysis 5. Well Deviation. 6. Log plotting in MD as well as TVD scales 7. Gas data Analysis and Interpretation 8. Pore Pressure Estimation 9. Surge & Swab 10. Kick monitoring and control 11. Licensed versions of Reporting software including latest Microsoft Office & Adobe Acrobat (PDF writer).	
D5	One Real Data Display for Wellsite Geologist inside Mudlogging Unit.	1
D6	Explosion proof Real-Time Display for Rig Floor	1
D7	Minimum two remote display computers in wellsite offices, one each for Company man and Wellsite Geologist, capable of displaying and downloading Realtime as well as historic data.	2
D8	Software should accommodate different dedicated channels for Total Gas out, Total Gas in and the difference between them (delta) with chromatograph analysis for both gas out as well as gas in should be recorded and displayed	1
D9	The Data Acquisition system should be capable of recording, storing and retrieving Depth data base at minimum of 0.1m interval.	1
D10	The Data Acquisition system should be capable of recording, storing and retrieving Time data base at minimum of 10 seconds interval.	1
E	**GEOLOGICAL SURVEILLANCE**	
E1	Digital Microscope with Light	1
E2	Fluoroscope	1
E3	Autocalcimeter	1
E4	Shale Density Kit	1
E5	Sample drying oven (OBM adapted)	1

E6	Electronic Balance	1
E7	Set of Cuttings sample processing equipment (Buckets, Mugs, Rubber Gloves)	1
E8	Rock Colour charts	2
E9	Grain Size Charts	4
E10	Resistivity Meter	1
E11	Stationery set, Geometry set, Scales and drawing materials	1
E12	IsoTubes Sampling Manifold with sufficient IsoTubes	1
E13	Set of Sieves including sizes 5mm, 2mm & 68-90micron	2
E14	Set of Geological equipment for cuttings analysis (including forceps, dissecting needles)	1
E15	Set of Chemicals (including but not limited to Hydrochloric Acid, Nitric Acid, Trichloroethane, Acetone, Phenolphthalein, Barium Chloride, bactericide, Alizarin Red etc.)	1
E16	Stainless Steel Sample processing trays	50
E17	Set of Laboratory equipment (including beakers, pipettes, test tubes, small bottles with droppers for chemicals, watch glasses, porcelain spot trays, watch glasses, etc..)	1
E18	Wax Bath including wax for core sealing	1
E19	Tool Box	1
E20	Hubco Bags with Inner Plastic bags for Unwashed Samples (Approx. 1000 Samples per Well) x 3 Sets	Sufficient for 10 wells
E21	100 ml Plastic Jars for Wash & dried Samples (Approx. 1000 Samples per Well) x 2 Sets	
E22	Mud Sample Cans (500 ml) (Approx. 50 Samples per Well) x 1 Set	
E23	Geochemical Sampling jars (Approx. 50 Samples per Well) x 1 Sets	
E24	Samples Trays (Approx. 1000 Samples per Well) x 1 Set	

E25	Set of Samples Packing Materials including Plastic Crates, wooden pellets, Permanent Marker Pens and Paint Marker Pens aluminum foil, plastic cling wrap, wax, packing tape, gas sampling bags etc.	Sufficient to Pack above samples
F	**OTHER EQUIPMENT**	
F1	Colour printers for Real Time data	1
F2	Off-Line Colour Printer	1
F3	Intercoms with minimum 6 (six) terminals connecting Rig Floor, Mud Engineer, Company Man's office, Wellsite Geologist's office, Mud Tanks / Shale Shaker and MLU.	1
F4	Fire Extinguishers, Eye Wash Station, First Aid Kit and Safety Harness (Full-Body Type).	1
F5	Ditch Magnet of 1-meter length	1

4.6 SENSORS & EQUIPMENT SPECIFICATIONS

The Contractor must provide Mud Logging Unit with all intrinsically safe and explosion proof sensors and detectors having digital display, audio/visual alarm & external alarms. The technical specifications of the Mud Logging Unit, tools and services required are given below. Contractors must fill up their offer and Tool Specifications against Company's required specification for each service in the matrix below and declare compliance/non-compliance to Company's required specifications.

i	**Hook Position / Depth**	
a	Sensor Type	Proximity
b	Accuracy	± 0.01 m
c	Range	0 to 50 m
ii	**Hook Load / Weight on Bit**	
a	Sensor Type	Strain Gauge /Pressure Transducer
b	Accuracy	± 1%
c	Range	0 to 1000 Tons
iii	**Rotary Speed (RPM)**	
a	Sensor Type	Proximity

b	Accuracy	± 1% (+/- 1 RPM)
c	Range	0 to 200 RPM
iv	**Rotary Torque**	
a	Sensor Type	Electric / Hydraulic
b	Accuracy	± 1%
c	Range (Electric)	0 to 1000 Amps
v	**Standpipe Pressure, Cementing Unit Pressure & Casing Pressure**	
a	Sensor Type	Electric/Hydraulic/Pressure Transducer
b	Accuracy	± 1%
c	Range	0 to 15000 psi
d	Linearity	0.5%
vi	**Pump Stroke Counter (SPM)**	
a	Sensor Type	Proximity
b	Accuracy	± 1 Stroke
c	Range	0 to 200 SPM
vii	**Pit Level Sensors**	
a	Sensor Type	Ultrasonic
b	Accuracy for Mud Pits	± 1.25bbl in a tank of 2.5mx 2m
c	Accuracy for Trip Tank	± .5 bbl in a tank of 2.5m x 2m
d	Range	0 to 700 bbl per pit
viii	**Mud Weight In and Out**	
a	Sensor Type	Multivariable Coriolis sensors
b	Accuracy	± 0.5% to 0.1 %
c	Range	6 to 24ppg
ix	**Mud Temperature In and Out**	
a	Sensor Type	Platinum Resistance /Coriolis Effect sensor
b	Accuracy	± 1%
c	Range	0 to 150 °C
x	**Mud Conductivity In and Out**	
a	Sensor Type	Toroidal Transformer

b	Accuracy	± 1%
c	Range	0 to 300 m Mhos/Cm
xi	**Flow Out Rate**	
a	Sensor Type	Sonic / Electromagnetic
b	Accuracy	(+/-1%)
c	Range	0 to 100% flow.
xii	**Auto calcimeter**	
a	Detection Range	0 to 100%
b	Sensitivity	± 1%
c	Balance	As suitable

4.7 DATA ACQUISITION SYSTEM

(i) Mudlogging data acquisition system including hardware and Software should be in line with latest international industrial standard practice and capable of providing all the services as mentioned.

(ii) Mudlogging data acquisition system should be capable of acquiring, recording, processing, storing and printing the data being acquired through various sensors and gas panels in real time.

(iii) All the Mudlogging equipment including sensors and gas panels should be calibrated in presence of Company Representative before starting operations at any wellsite, and the calibration records should be submitted to Company representative.

(iv) The data monitoring system should be equipped with Audio/Visual alarms alerting any abnormal changes or fluctuations in Realtime data parameters.

(v) The Data Acquisition system should be capable of recording, storing and retrieving Depth database at minimum of 50 cm interval.

(vi) The Data Acquisition system should be capable of recording, storing and retrieving Time data base at minimum of 10 seconds interval.

(vii) The mudlogging system should be capable of retrieving the stored data for analysis and regular or spot reporting as per Depth Data Drilling Policy given by Company.

(viii) The service provider will be responsible for Installation, operation and Maintenance of necessary hardware and software for transmission of all data

acquired by the mud logging unit and third-party data in REAL TIME (as in WITSML or higher version) from well site to specified Operator Locations. Necessary software(s) with multiple user ids (minimum 10 No's) must be provided for remote viewing of mud logging and third-party data in real time at operator's office/remote location with scroll back as well as data downloading facility for historic data.

(ix) State-of-art computer systems of recent generations or higher shall be installed in the mudlogging unit. The Online and Off-line PC should be compatible for interchange and loaded with both on-line software and off-line software. At least one back-up computer loaded with all the online as well as offline software should be available in the mudlogging unit.

(x) Software for online calibration of sensors and detectors continuous signals acquisition from sensors and detectors, processing, colour printing, plotting, displaying on colour monito, storing, organization and retrieval of the processed data to monitor all gas, drilling, mud, geological parameters.

(xi) Software should have provisions for import/export of digital data in standard formats such as ASCII and LAS.

(xii) Reporting software should be capable of generating output reports in formats like pdf or MS- word, excel, PowerPoint etc.

Technical Specifications for Computers to be deployed in Mudlogging units are as follows:

1	Processor	Intel Core I7, 3.4 GHz, 8 MB L2 Cache or higher with latest Microsoft Windows
2	RAM	16 GB or higher
3	Hard disk	1 TB (or more)
4	Video card	Single head SVGA card 1920 x 1080
5	USB	USB 3.0 and above
6	Monitor	23" Desktop LED monitor
7	Off-line color printer	For printing, scanning, photocopying reports, graphics of minimum 600 dpi.

4.8 GEOLOGICAL SURVEILLANCE

4.8.1 Sample Collection & Packaging:

Tentative Sampling program for wells in this exploratory drilling campaign is as follows:

Sl. No.	ITEM	Quantity	No. of Sets	Containers#	Frequency*
1	Unwashed samples	500 gms	Three (03)	Hubco bags with Plastic liners	5m in Non-Reservoir Section 3m in reservoir section
2	Wash and dried samples	100 gms	Two (02)	Plastic jars (100ml)	5m in Non-Reservoir Section 3m in reservoir section
3	Mud Sample	500 ml	One (01)	Glass bottles	Every 250m + Beginning and TD of each hole section.
4	Geochemical Samples	500 gms	One (01)	Metal Tins (500ml)	Every 50m across reservoir section
5	IsoTubes Sampling	One Isotube per Sample	One (01)	Isotubes with manifold	For collection of Gas samples at major gas shows while drilling as and when required
6	Final Packing for Transportation of all cutting and mud samples	As required		Plastic Crates Marker Pens, Packaging tapes and other material	

Notes:

a) All consumable required for sampling should be provided by the mudlogging service provider at no additional cost.
b) The samples Should be collected in container and quantities as specified in above table.
c) Sampling should be carried out as per the sampling program given in Company's Depth Data Drilling Policy. Actual Sampling frequency may slightly vary depending upon ROP as well as subsurface geology encountered while drilling. Additional samples like bottom-up samples at coring points casing points or samples from the mud cleaning equipment, etc. should be collected at the request of Company Representative.
d) During fast drilling, the Wellsite Geologist may vary the sampling interval so as to collect optimized number of samples. Sampling intervals may be adjusted based on hole size, ROP and hole conditions, particularly in slim hole sections. Drill cutting samples from water base mud should be collected utilizing at least two or more sieves and cleaned under running tap water thoroughly enough to remove the mud film but not washing away the soft and fine drill cuttings.
e) All the containers, bags and boxes used for collecting and storing the drill cutting samples, core chip samples, mud samples collected while drilling operations must be appropriately labelled with well name, depth, Sample type, Date and time using permanent marker pens; then boxed and stored in plastic crates to be ready for shipment. The sample package should be accompanied by a manifest with details of depths, sample types, sets, approximate weight and quantities of the samples collected.

3.8.2 **Lag time:**

a) Mudlogging crew should input correct details of the drill string and other lag time related parameters into the system for automatic calculation in the system.
b) Lag time should be verified at least once a week by manual calculations.
c) Lag test for hole diameter enlargement should be carried out every 200m using an appropriate tracer material such as Calcium Carbide or rice; and corrections should be applied in mudlogging system if hole enlargement is observed from the Lag test results.
d) Special attention should be given to lag time accuracy and cuttings transport behavior in slim hole sections.

3.8.3 **Lithology Descriptions:**

Systematic descriptions are required to be done for collected drill cuttings, core chips and sidewall core samples following industry standards and utilizing standard colour charts, grain size charts & appropriate chemical tests. While describing the drill cutting samples, a single layer of representative sample should be used for lithological descriptions. Foreign material such as mud additives, loss circulation material, cement and pipe dope, bit scraps should be identified and mentioned under remarks columns of the sample description sheets. Caving's in drill cuttings should be identified, mentioned and monitored for their increasing percentages. If size or percentage of caving's is found to be increasing beyond 10%, it should be immediately reported to the company representative.

Microscopic examination shall be carried out on all the samples by utilizing Digital microscope to describe the lithological characteristics. Description of rock types, percentages and visual characteristics using standard classification system, comparison chart to determine grain size, sorting, roundness, Visual porosity, Fossil identification, Accessory mineral identification (calcite, clay, glauconite, silica, metallic minerals etc.).

On lithology work sheet to write sample description for each new lithology, using standard terms and order. Foreign materials should not be included in lithology description. Foreign material includes caving from the hole and where identifiable, mud additives, loss circulation materials, cement and pipe dope etc. If any foreign materials are observed, then it should be noted on the Master log. MLU personnel must take care of following Hydrocarbon detection methods:

a) UV fluorescence
    i. Direct
    ii. Cut
    iii. Residual
b) Intensity of any petroleum odor
c) Staining and Bleeding
d) Oil reaction in acid
e) Wettability
f) Gas composition

3.8.4 **Digital Microscopy System: Required specifications are as follows:**

a) Zoom stereo microscope body with zoom range 4:1. Microscope shall be linked to digital camera and computer for capturing, storing sample images and for transmitting the data to base. Microscopes shall be capable for displaying sample images over monitors.
b) Basic magnification continuously variable between 8X and 32X (minimum) without extra objective and eyepieces.
c) Built-in binocular tube with 10X/20X mm fixed or focusable eyepieces that cover large areas of sample 25 mm to 6 mm (minimum).
d) Resolution up to 170 Lp/mm (minimum)
e) Integrated LED illumination for reflected and transmitted light. Light quality homogenous with variable light intensity control. Additional optic fiber illuminators are also preferable with spare bulbs.
f) Microscopes should be equipped with dedicated phototube, digital camera & fitting for Digital photomicrography (minimum 5MP digital imaging) with colour bar and grain size reference for all images. Microscopes should have facility to transfer images to online computers and logs.

Note: Documentary evidence in support of the microscope specification should be enclosed with the technical bid.

3.8.5 **Fluoroscopy:**

All the cutting and core chip samples must be examined under fluoroscope to describe the nature and intensities of Oil Shows and described using following criteria:

- Odor
- Direct Fluorescence
- Solvent Cut Fluorescence
- Residual Fluorescence
- Natural Fluorescence

Specifications for Fluoroscope: The Fluoroscope should have minimum two UV tubes of different wave lengths and one white tube with guarded viewing glass. The tube arrangement shall be detachable. Sample chamber doors on left and right side with

opening size of 12 cms. X 12 cms. Each tube shall have separate on-off switch. Bulb section to be detachable for use in scanning of cores.

3.8.6 **Shale Density**

Shale Density measurement should be carried out on shale cuttings at interval of every 10m by utilizing appropriate shale density apparatus. The results and Shale Density Plot of shale density studies should be accordingly interpreted and incorporated in the final well report.

3.8.7 **Chemicals and Material Safety Data Sheets (MSDS):**

Chemicals required for geological studies should be safely stored in designated cool and dry space inside Mudlogging unit. The chemical storage should be properly labelled, and chemicals should be handled with due care following instructions as given in their Material Safety Data Sheets MSDS so as to avoid any safety incidents. For each chemical, laminated copies of respective MSDS MUST be handily available in the mudlogging unit for quick reference.

3.8.8 **Drying Facility**

The Mudlogging unit should be equipped with drying oven for drying of sample cuttings. The Oven should have space for drying at least ten sample plates / trays of up to 6" diameter / length at a time. Drying oven must be certified for drying cutting samples collected from Oil base mud.

3.8.9 **GAS DETECTION SYSTEM**

Mudlogging Unit should be equipped with latest Gas detection system comprising of but not limited to Gas Trap, Shaker to Unit Sample lines, moisture filters, pneumatic control panel, Total gas detector, Chromatograph & CO_2 detector. Mudlogging software should also be capable of recording and storing calibration as well as drilling gas data continuously as specified below.

(i) **Technical Specifications for Gas Detection Equipment:**

1	**Total Hydrocarbon Gas Detector**	
a	Detector type	FID/TCD
b	Accuracy	1 ppm
c	Range	1 ppm to 100%
d	Resolution	10 ppm
e	Sensitivity	1-100 ppm
f	Sampling mode	Automatic / manual
g	Calibration Gas	Minimum 3 concentrations of CH4 gas (2.0%, 20.0% and 99.9% pure)
2	**Gas Chromatograph**	
a	Detector Type	FID/TCD
b	Accuracy	10 ppm
c	Range	0-100%
d	Sensitivity	1-100% (1-5 ppm)
e	Sampling mode	Automatic / manual
f	Cycle time	45 sec or less
g	Components	C_1 to C_5
h	Measurement Unit	ppm
i	Calibration Mixtures	Minimum 2 concentrations of C_1-C_5 gas (99.9% pure)
3	**H_2S Detection (Four Channels)**	
a	Sensor Type	Solid state semiconductor/electro-chemical sensing element
b	Accuracy	± 1 ppm
c	Range	0 to 100 ppm
d	Calibration ampoules	5 ppm, 10 ppm and 20 ppm
4	**N2 & CO_2 Detection**	
a	Sensor Type	Non-Dispersive Infra-red
b	Accuracy	+/- 0.01%
c	Range	0-25% vol/vol

(ii) **Mud Degasser system**

Mud degasser system should be a Constant Volume Degasser type so as to maintain constant volume of mud during degassing process irrespective of fluctuation in mud level in flow line or any other factors including volume, flow rate. The degasser motor should have explosion proof electric or pneumatic degasser motor with agitator mounted on degasser trap, capable of extracting only gas from mud and preventing cuttings, mud and moisture from entering the gas suction line and choking the outlet.

(iii) **Carrier Gas Supply**

Source for carrier gases required for Gas Panels such as air compressor, Hydrogen generator and Hydrogen or Helium gas cylinders should be safely installed or stored in the Mudlogging Unit without causing any safety hazards for mudlogging operations as well as other activities at the wellsite.

(iv) **Back-up Gas Panels**

A complete set of Gas detection system including Total Gas detector and Chromatograph, Degasser and spare sample line must be installed as backup and kept ready to be switched over in case any of the gas detection system components in use fail.

(v) **Calibration of Gas Panels**

All the peripherals, sensors and gas detection panels to be regularly serviced and checked for calibrations. Calibration of gas panels must be carried out in consultation with Wellsite / Operations Geologist and the calibration record along with comments regarding difference between actual Vs observed values should be submitted to Company.

(vi) **Gas Data Interpretation**

Gas data acquired while drilling should be QC'ed, analysed and interpreted regularly to differentiate the non-representative gases and identify the quality and composition of hydrocarbon in potential zones for production using appropriate gas ratio techniques such as character ratios, balance ratios, wetness ratios, C1/C2 ratios, triangular plots, and pixler plots etc.

Normalized gas curves should be computed in real time using an appropriate formula to eliminate the effect of drilling parameters such as ROP, bore hole diameter, flowrates etc.

Connection Gases along with mud weight and ECD must be monitored with care and reported immediately to the company representative.

4.9 **Realtime Pore Pressure Prediction (optional Service)**

Formation pressure analysis and monitoring services shall be carried out in real time. Pore pressure services shall include but not limited to real time pore pressure estimation of drilled section and forecasting of sections to be drilled along with identification of potential zones with abnormal formation pressure, predicting kicks & mud loss zones, and other well control challenges using the following:

1. The service company must provide a dedicated software to carry out pore pressure studies generating and analysing the D-exponent, Pore Pressure, Fracture Pressure curves using suitable equations, drilling parameters and calibrating them with LWD / wireline, formation pressure and LOT data from current and offset wells.
2. Monitoring of Pore Pressure indicators while drilling.
3. Monitoring and continuous recording of Drill cuttings with special attention to pressure caving's and hydrocarbon show.
4. Monitoring and continuous recording of formation Gases (Including produced gas, trip gas and connection gas) Vs ROP & background gas levels.
5. Monitoring and continuous recording of In/Out mud flows.
6. Monitoring and continuous recording of In/Out mud temperatures, chloride changes.
7. Monitoring and continuous recording of bulk density & shale density.
8. Surge and Swab pressure calculations.

Deliverables:

1. Daily Pore Pressure log and Pore Pressure report with estimated current pore pressure & Fracture pressures and recommendations for safe drilling fluid parameters for drilling ahead.
2. Interim Pore Pressure report at the end of each hole section with pore pressure

analysis of drilled section and recommended safe mud weight window for next section to be drilled.

Dedicated Final Pore Pressure Report at the end of well.

4.10 **Early Kick Detection (Optional Service)**

Early Kick detection services utilizing accurate flow metering device for Realtime detection gains or losses shall be required for fastest detection of fluid influx or loss in the well. Early Kick detection shall include but not limited to quick detection of kicks & mud loss events monitoring the changes in Mud flows, Mud Density, pit levels, abnormal flowbacks and Connection Flows using dedicated hardware and software.

Measurements:

Changes in Mud Density, Changes in Mud flow In Vs Mud Flow Out, abnormal flowbacks, Connection Flow Monitoring.

Tools:

1. Hardware, and sensors for data acquisition including but not limited to Coriolis Flowmeter or equivalent, motion-compensated pit volume sensors or equivalent.
2. Software should be capable of applying Pipe movement correction, mud compressibility and heave compensation, flow back fingerprinting.
3. Software should have provision for Recording, analysis and display of kick monitoring parameters including mud flows, density and logs and plots.

Deliverables:

1. Daily kick detection reports with QC sheets, Log / plots & Interpretation of monitored kick detection parameters.
2. Interim kick detection reports with QC sheets, Log / plots & Interpretation of monitored kick detection parameters at the end of section.
3. Dedicated Final well Report on Early Kick Detection at the end of well.

4.11 ADVANCED GAS DETECTION SYSTEM (Optional Service)

Advanced Gas Detection system for continuous extraction and Gas Chromatography analysis will be required to be deployed on requirement basis comprising of High-resolution chromatography for identification and analysis of C_1 to C_8 including aromatic & cyclic components. Software for advanced Gas Detection should accommodate different dedicated channels for Total Gas out, Total Gas in and the difference between them (delta) with synchronized chromatograph analysis for both gas out as well as gas in should be recorded and displayed.

Measurements:

Measurement of C_1 to C_8 including light aromatic & cyclic components, and nonhydrocarbons such as CO_2 and H_2S.

Tools:

Hardware and sensors for advanced gas data acquisition including but not limited to:

1. Constant volume gas traps at suction pit as well as flowline / shale shakers.
2. high resolution chromatographs capable of detecting and recording data for light aromatic & cyclic components and nonhydrocarbons such as CO_2 and H_2S.
3. Computer software for recording, interpretation, and analysis of required gas parameters with Monitors to display output logs and plots.

Deliverables:

1. Daily Gas Report including QC, Interpretation & fluid typing for recorded gas data along with Gas ratio log with columns for interpreted parameters curves and fluid typing.
2. End of section report including QC, Interpretation & fluid typing for recorded gas data along with Gas ratio log with columns for interpreted parameters curves and fluid typing.
3. Dedicated Final well Report on Gas Data Interpretation at the end of well.

4.12 Wellsite X-Ray Diffraction and X-Ray Fluorescence: (Optional Service)

Contractor to provide suitable wellsite XRD/XRF equipment at MLU along with required accessories for sample preparations, data analysis etc. Following specifications or higher to be provided by contractor:

XRD:

Portable XRD instrument to detect major phases of the minerals at wellsite

- Cycle Time : 25mins
- Accuracy : +/- 5% per mineral phase
- Sample Grain Size : <150 micron
- XRD Software : Should be capable to search and match the results with ICDD-PDF database or equivalent for identification of phases.

XRF:

Portable tabletop/benchtop XRF instrument for elemental analysis of the minerals at wellsite. Suitable software to be provided for search and match the results with ICDD database for analyzing the XRF data.

- Type: Energy Dispersive X-Ray Fluorescence Spectrometer
- Measurement Range: Mg to U
- With associated consumable kits, peripheral devices & cables, calibration check and recalibration kits

ICDD database to be provided along with suitable software for search & match and analyzing XRD and XRF data.

Contractor shall have at least one-year experienced Data Engineer in handling the XRD/XRF equipment.

4.13 Real-Time Display Monitors:

Remote Real Time Monitors:

Remote display LED screen of size not less than 55" capable of displaying graphic and alpha numerical real time data from MLU shall be placed in OIL's KGB office, Offshore base

office. The real time monitoring system should also include necessary software for manual playback/ scroll back for viewing earlier events.

The Real Time Monitor system should include:

1. Remote, secure real time monitoring of time depth-based data from any global location.
2. Data viewing through any web browser/web enabled device that include PC, laptop, smart phone and tablet (app based).
3. Support and visualization for mud logging & drilling data.
4. Number of access license at least 30 numbers
5. Facility of streaming in of 3rd party data like MWD, LWD or any other data stream in WITS, WITSML from the rig site.

Note: Clientless remote desktop access is not acceptable

4.14 **Determination Of Geological / Drilling Parameters:**

1. Determination of Shale Density (preferably with Zinc Bromide solution and Density beads), Shale Factor.
2. Determination of kill mud weight, volume etc.
3. Real time plots of continuous recording of gas and FID based analysis of gas (C1-C5).
4. Determination of volume and mud loss in case of circulation loss.
5. Determination of pressure drops in mud circuit, jetting velocity, bottom dynamic pressure and Equivalent Circulation Density (ECD).
6. Determination of Gas Quality Control.

4.15 **Detection of down-hole problems/ anomalies, etc.:**

1. High/ Abnormal pressure prediction: Analysis/ computation of relevant data for detection of high-pressure zones based on Dc Exponent, Shale Density, Shale Factor, Sigma log and detection of H2S, CO2 etc. with accuracy up to 10 ppm and 5% respectively.
2. Immediate detection of kick and monitoring of pipe pressure
3. Detection of mechanical failure of bit, drill string and pumps.

4. Promptly inform rig floor, Company Man & wellsite Geologist above down hole problems.

4.16 **Accessories: the bidder shall make available the following accessories in mud logging unit:**

1. An explosion proof purged LCD or LED monitor with real time display should be installed on the rig floor along with provision for an intrinsically safe audio alarm.
2. A suitable LCD or LED monitor (minimum 42") to display various real time sensor signal, parameters and also to represent graphical display of parameters with time-to time comments in the mud logging unit.
3. Three suitable LCD or LED monitors in MLU for Data engineer, Mud logger and Sample catcher.
4. CD/DVD writer with necessary software
5. One online repeater LCD or LED monitor to be installed in each of Company Supervisor's office, Geologist office, mud engineer's office or at mud pit area.
6. Back-up facility of 24 hours online graphical screen saving with comments.
7. Sufficient No's of tools and spare sensors (minimum 2 sets) should be available at MLU for smooth day-to-day operations.
8. UPS for backup power for the data processing/ acquisition systems. UPS capable of supplying at least 30 minutes of electrical power to the equipment within the unit in the event of a power failure.
9. Intercoms with minimum 6 (six) terminals connecting derrick floor, mud attendant, company representative office, geologist's office, mud engineer's office and MLU.
10. Fire extinguishers, one (1) eye wash station, First aid kit and safety harness (full-body type).
11. Ditch Magnet of at least 1 meter length.
12. All other supplies as required to complete the services including but not limited to bactericide for samples intended for geochemistry and paleontological analysis, aluminum foil, plastic cling wrap, wax, packing tape, indelible marker pens etc.

4.17 **Back-Up Equipment and Materials:**

Contractor is responsible for supplying all back-up equipment, materials in order to provide smooth and uninterrupted mud logging services to Company.

Back up tools will be maintained either on the rig or at Contractor's designated base (Details to be given in tender) for all tools listed above.

All equipment and materials noted above are to be provided, in quantities required to meet operational requirements, at no additional charge to the Company over and above "Daily Rates".

5. REPORTING:

Mudlogging service provider should produce and submit the data and reports as per the schedule discussed in the following paragraphs.

5.1 Routine Reports:

Tentative structure to be followed for routine Mudlogging reports is tabulated below. However, reports and their schedule may be altered by the company if and as required.

Report	Format	Report Coverage	Submission Time	Remarks
Midnight Report	pdf	0000 – 2400 Hrs	Daily 1 am	
Daily Mudlogging Report	pdf	0600 – 0600 Hrs	Daily 7 am	
Evening Report	pdf	0600 – 1600 Hrs	Daily 4.30 pm	Brief Operational / geological update since 0600 Hrs.
Time Database	Las	0000 – 2400 Hrs	Daily 7 am	10 seconds interval
Operations Log	pdf	0000 – 2400 Hrs	Daily 7 am	
Depth database	Las	Start – Current Depth	Daily 7 am	0.1m interval
Gas Data	Las		Daily 7 am	0.1m interval
Percentage & Interpreted Lithology	Excel		Daily 7 am	

Cutting description Sheets	MS Word / Excel		Daily 7 am	
Mudlog	pdf		Daily 7 am & 4.30 pm	1: 500 scale
Drilling Log	pdf		Daily 7 am	1: 500 scale
Pore Pressure Log	pdf		Daily 7 am	1: 500 scale
Gas Ratio Log	pdf		Daily 7 am	1: 500 scale

Notes:

Report Templates and sample Logs for above reports should be submitted by Contractor with the bid. Original Time/Depth data may be imported in offline computers for QC, analysis, interpretation and reporting purposes. However, manipulation of original Time or Depth data is strictly prohibited.

Apart from regular reports, additional information / data to be provided if and as desired by Company Representative.

In case the report templates proposed by Contractor are not acceptable to Company, Company may modify / provide new templates for reporting, which will be required to be followed by the service provider during service period.

Midnight report including but not limited to 24-hour break-up of operations, drilling parameters with brief summary of oil and gas shows and geology encountered in from previous midnight, should be submitted by 1am.

Daily Mudlogging Report including but not limited to brief summary of operations, drilling parameters, and details of geology and oil & gas shows encountered along with all the logs and digital data mentioned in above table for 24 hours period from previous 0600 hrs. should be submitted in the agreed format by 7am as mentioned in above table.

5.1.1. **Mud Log:**

To use an industry standard mud log format, generate and maintain current mud logs in the computer and prepare their plots as requested by OIL geologists in 1:240, 1:500 and 1:600 scale or in any other scale as required including the following:

1. The mud log should display lithological information in percentage terms of rock description and interpretation in which the recovered rocks are correlated with drill rate and gas. Abbreviation of lithology should be given in remarks column.
2. Total gas curve and component gas curves to be plotted on log scales in units of ppm.
3. Presentation of Mud weight in and mud weight out should be in the fourth cycle of the gas track on all depth scales. Mud weights need to be recorded as a comment every 12 hours while drilling and whenever a mud weight change is made. Also to record and plot all trip gas, bottom-up gas and connection gas.
4. To record hole problematic events (such as lost returns, drill pipe sticking etc.) on the log.
5. To record all casing and logging points on the master log.
6. To record all bit details in master log.
7. Mud additive information on the log as remarks.
8. To plot Rate of penetration (ROP) as meter/hour and weight on bit with rate increasing towards the left edge of the log. Gamma ray (from MWD/Wireline) plot should be increasing towards right side.
9. End of drilling a well composite log to be provided with mud logging and basic wire line log details. Also, "Dc" Exponent and Equivalent Circulation Density (ECD) calculation needs to be plotted post computation.

5.2 **End of section Report:**

End of section Report should be submitted at end of each hole section, which should be comprising of following reports updated till current section TD:

Report	**Format**	**Remarks**
Well Completion Report	Word	Updated till current depth and section.
Depth database	Las	0.1m interval

Gas Data File	Las	0.1m interval
Percentage & Interpreted Lithology	Excel	
Cutting description Sheets	MS Word/ Excel	
Mudlog	pdf	1: 500 scale
Drilling Log	pdf	1: 500 scale
Pore Pressure Log	pdf	1: 500 scale
Gas Ratio Log	pdf	1: 500 scale

5.3 **Final Well Report:**

Writing of Final Well Report should commence from the date when mudlogging unit starts to function at any well. It should be continuously updated as the data keeps arriving. Final Well Report should be submitted at end of well before rig down the mudlogging unit.

The template for mudlogging Final Well report will be agreed between Company and the service provider in the beginning, which needs to be used for writing the Final well Report.

The Final Well Report should comprise of but not limited to the following chapters:

FINAL WELL REPORT	
Chapter no.	Chapter
1	General Information
1.1	Introduction, well objective and results
1.2	Well summary table
1.3	Location map
1.4	Well profile
1.5	Scope of services
1.6	Service companies
1.7	Mudlogging Personnel
2	Engineering Summary

2.1	Section wise Drilling summary
2.2	Mud Engineering summary
2.3	Casing summary
2.4	Cementation summary
2.5	Operational complications
2.6	Drilling Progress Chart- planned vs actual
2.7	LOT/FIT details
2.8	NPT break-up Analysis
2.9	Time analysis: section wise
2.10	Deviation profile
3	Geological Summary
3.1	Formation tops
3.2	Litho-stratigraphic units
3.3	Gas shows
3.4	Oil shows
3.5	Gas Data Interpretation and analysis
3.6	Conventional cores
3.7	Side wall cores
3.8	IsoTube sampling details
3.9	Pore pressure summary (including D-Exponent plot)
3.10	ROP vs depth plot
3.11	Flowline temperature plot
3.12	Shale density plot
3.13	Calcimetry
3.14	Wireline Logging
3.15	Cutting sample record
Annexures	
A	Drilling fluid: Planned Vs Actual
B	Bit record
C	BHA details

D	Deviation Data
E	Date wise operations summary
F	Lithological cutting description sheets
Enclosures*	
A	Composite Log (1: 500) + (1:200) MD as well as TVD* Scales
B	Mudlog (1: 500) + (1:200) MD as well as TVD* Scales
C	Drilling Log (1: 500) + (1:200) MD as well as TVD* Scales
D	Pore Pressure Log (1: 500) + (1:200) MD as well as TVD* Scales
E	Gas Ratio Log (1: 500) + (1:200) MD as well as TVD* Scales

5.4 **Final Deliverables:**

The service provider should deliver 3 (Three) hard copies of Final Well Report including Annexures and Enclosures mentioned under paragraph 16.3 for each well. Also, three digital copies of Final deliverables as tabulated below, should be archived separately in three digital storage devices (pen drive or portable Hard disk) readable on USB 3.0 Ports and handed over to the company. All above deliverables shall be submitted to Company after completion of each well within 15 (fifteen) days from the date of rig-down notice.

Final Deliverables for Realtime Pore Pressure Prediction, Early Kick Detection & Advanced Gas Detection services should be as per their deliverables mentioned in Paragraphs 4.10, 4.11 & 4.12 respectively. Details of digital data, logs and report templates for these services will be shared before the job.

Final Deliverables for other routine should be comprising of data and reports covering entire well information from spud to TD of the well. In case, the well is spudded before mudlogging unit is functional, the data from spud till mudlogging startup date will be provided by Company to the service provider.

Along with the final deliverables, service provider will be required to prepare and submit the composite log for the well. The required template and data from wireline / LWD and coring services will be provided to service provider by the company.

Report	**Format**	**Final Deliverables**
Well Completion Report along with Annexures and Enclosures mentioned under paragraph 16.3	Word	3 hard copies with 3 electronic copies
Composite Log (1: 500) + (1:200), MD as well as TVD* Scales	pdf	
Mudlog (1: 500) + (1:200), MD as well as TVD* Scales	pdf	
Drilling Log (1: 500) + (1:200), MD as well as TVD* Scales	pdf	
Pore Pressure Log (1: 500) + (1:200), MD as well as TVD* Scales	pdf	
Gas Ratio Log (1: 500) + (1:200), MD as well as TVD* Scales	pdf	
Operations Plot (For each day of Operation)	pdf	3 electronic copies
Time database 10 seconds interval	Las	
Depth database 0.1m interval	Las	
Gas Data File	Las	
Percentage & Interpreted Lithology	Excel	

*Applicable in case of deviated wells only.

6.0 PERSONNEL ON MUDLOGGING UNIT DURING ONE RIG OPERATION

To perform the Services stipulated in the Contract, the Contractor will assign personnel as specified by the Company in this Appendix. The Company will exercise its right to reject

personnel found not to be suitable and Contractor will replace with acceptable personnel at no cost to the Company.

For individual jobs or projects, the Company may, from time to time, require Specialists and/or Support Staff other than those listed below, but which are included in Contractor standard price list. The Specialists and/or Support Staff so required will be made available to the Company consistent with Contractor standard price list and conditions stated elsewhere in this Contract.

For all contractor's personnel provided, daily Rates shall begin when personnel reach the Drilling Unit and shall cease upon departure from the Drilling Unit. No double rates shall be charged during change-out periods of personnel.

Job Description		**No. Required**
Data Engineer Surveillance, monitoring and acquisition of geological and drilling parameters. **Minimum requirements**:		2
1.	M.Sc. / BE / B. Tech degree in Geology/Petroleum Technology/Petroleum Engineering,	
2.	At least 5 years Mudlogging experience in Mud Logging services with minimum 3 (three) years as Data Engineer as on bid closing date. Period in this regard shall be reckoned from original bid closing date	
3.	At least 1 year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language fluency.	
5.	Basic HS&E and Safety training	
6.	Ability to maintain and smoothly operate all hardware and software contained in the mud-logging unit.	

Job Description		**No. Required**
Mud Logger Surveillance, monitoring and acquisition of geological and drilling parameters. Preparation of lithologic strip log. Preparation, packaging for transportation and analysis of cutting samples. **Minimum requirements**:		2
1.	M.Sc. / BE / B. Tech degree in Geology/Petroleum Technology/Petroleum Engineering,	
2.	At least 3 years Mudlogging experience in Mud Logging services with minimum 1 (one) years as Mud logger as on bid closing date. Period in this regard shall be reckoned from original bid closing date	
3.	At least 1 year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language capability.	
5.	Basic HS&E and Safety training.	

Job Description		**No. Required**
Sample Catcher To Assist Mud Logger as required, responsibilities including but not limited to sample catching. **Minimum requirements**:		2
1.	Conversational and written English language capability preferred.	
2.	Basic HS&E and Safety training	

Job Description		**No. Required**
Realtime Pore Pressure Engineer (Call Out) Surveillance, monitoring and acquisition of Geomechanics and Pore Pressure Engineering studies using Wireline data, LWD data & drilling parameters specifically required for precise estimation, monitoring & forecasting of formation pressure & fracture pressure for drilling safety. **Minimum requirements:**		2
1.	Bachelor of Science degree in Geology or Engineering.	
2.	At least 5 years Oil & Gas industry experience with minimum experience of two years in Geomechanics / Pressure Engineering studies with duties as above.	
3.	At least 1-year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language fluency.	
5.	Basic HS&E and Safety training	

Job Description		**No. Required**
Advanced Gas Data Analyst (Call Out) Surveillance, monitoring and acquisition of Advanced Gas Data using High resolution gas data acquisition systems and software specifically required for QC, Analysis and interpretation of C_1 to C_8 hydrocarbons including light aromatic & cyclic components, and nonhydrocarbons such as CO_2 and H_2S. **Minimum requirements:**		2
1.	Bachelor of Science degree in Geology or Engineering.	

2.	At least 5 years Mudlogging experience with minimum experience of two year's experience of working on Advanced Gas Detection services as on bid closing date. Period in this regard shall be reckoned from original bid closing date.	
3.	At least 1-year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language fluency.	
5.	Basic HS&E and Safety training	

Job Description		**No. Required**
Kick Detection Engineer (Call Out) Surveillance, monitoring and acquisition of drilling parameters using dedicated hardware and software specifically required for early detection and monitoring of kick and loss events. **Minimum requirements:**		2
1.	Bachelor of Science degree in Geology or Engineering.	
2.	At least 5 years' Oil & Gas industry experience with minimum experience of one year experience of working on Early Kick Detection services with duties as on bid closing date. Period in this regard shall be reckoned from original bid closing date	
3.	At least 1-year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language fluency.	
5.	Basic HS&E and Safety training	

Job Description		**No. Required**
XRD / XRF Service Engineer (Call Out) Surveillance, monitoring and acquisition of mineralogical and elemental analysis of drilling cuttings and core samples using X-Ray Diffraction (XRD) and X-Ray Fluorescence (XRF) techniques. **Minimum requirements:**		2
1.	Bachelor of Science degree in Geology or Engineering.	
2.	At least 5 years' Oil & Gas industry experience with minimum experience of one year experience of working on XRD / XRF analysis with duties as on bid closing date. Period in this regard shall be reckoned from original bid closing date	
3.	At least 1-year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language fluency.	
5.	Basic HS&E and Safety training	

Mud Logging Unit Base Coordinator (At no additional Cost) – For Rig 1 and Rig 2

Job Description	**No. Required**
Mud Logging Unit Base Coordinator Experienced Mud Logging Unit Base Coordinator to oversee, coordinate, and support mud logging and associated services (including Pore pressure, Advance gas analysis, XRD/XRF and Early kick detection) for Rig 1 and Rig 2 operations. The coordinator shall ensure operational efficiency, data quality, reporting consistency, and interface with Company representatives and offshore teams. Minimum requirements:	1

1.	M.Sc. / BE / B. Tech degree in Geology/Petroleum Technology/Petroleum Engineering,	
2.	At least 8 years Mudlogging experience in Mud Logging services with minimum 3 (three) years as Mud logging supervision / coordination role as on bid closing date. Period in this regard shall be reckoned from original bid closing date	
3.	At least 1 year previous experience on floating drilling rigs in water depths greater than 300m.	
4.	Conversational and written English language fluency.	
5.	Basic HS&E and Safety training	
6.	Ability to maintain and smoothly operate all hardware and software contained in the mud-logging unit.	

All of the above personnel are required to be on the rig on a continuous basis throughout the term of the Contract, except as specified by the Company. The company's representative may temporarily release the above personnel during operations deemed appropriate. The Contractor will rotate its personnel on an appropriate schedule with prior approval of schedule by the Company.

When mobilized, the Contractor will rotate these personnel on an appropriate schedule with prior approval of schedule by the Company.

The Contractor, at its sole cost, will provide the Contractors personnel required to work at the Drilling Site, appropriate and adequate safety equipment required by the Company to be used by personnel on the rig including, but not limited to, hard hats, safety boots (steel toe), rubber gloves, slicker suits, eye protection and hearing protection.

6.1 ADDITIONAL PERSONNEL ON MUDLOGGING UNIT DURING TWO RIG OPERATION

Sl. No.	Description	No's
1	Data Engineer	2
2	Mud Logger	2
3	Sample Catcher	2

The additional Personnel during Two (2) rig operations shall be having similar qualification and experience as mentioned in Clause No. 6 above.

6.2 DUTY PATTERN

The Contractor shall provide well qualified, trained and experienced crew to efficiently operate and maintain Mudlogging Unit round the clock at the wellsite, following the shift pattern to ensure smooth running of operations as specified below:

Sl. No.	Description	No's
1	Data Engineer	2 (1 day shift + 1 night shift)
2	Mud Logger	2 (1 day shift + 1 night shift)
3	Sample Catcher	2 (1 day shift + 1 night shift)
4	Pore Pressure Engineer	2 (1 day shift + 1 night shift) On call
5	Early Kick Detection Engineer	2 (1 day shift + 1 night shift) On Call
6	Advanced Gas Data Analyst	2 (1 day shift + 1 night shift) On Call
7	XRD/XRF Service Engineer	2 (1 day shift + 1 night shift) On Call
8	Mud Logging Unit Base Coordinator	1 (Should be Provided at no additional cost to the Company for both the rigs)

7.0 **DATA CONFIDENTIALITY**

7.1 Contractor shall take full responsibility for the protection, security and confidentiality of records, digital or physical data till the date it is handed over to the Company.

7.2 Contractor shall upon completion of the work return to Company all originals and copies of maps, documents, recorded magnetic tapes/cartridges and all other data supplied to them or generated by them in connection with the work. These are the absolute property of the Company. Contractor has to ensure that after completion of the work, all the information will be deleted from the system.

7.3 The Contractor will be required to sign a confidentiality agreement with Company before the commencement of work & at the time of demobilization for the data security during and after the contract period, as per formats prescribed by Company.

8.0 MAINTENANCE OF MLU

The complete Mud logging unit and all its sensors & accessories are to be maintained in proper working condition by bidder throughout the period of contract, including extension, if any to deliver uninterrupted services. The MLU crew to be deployed by the bidder must be capable, competent and experience enough to carry out routine maintenance of the unit to provide round the clock trouble free services. Any breakdown, defect, malfunction etc. of any item/equipment will be attended / replaced immediately as may require. For this purpose, necessary spares and consumables to carry out on site repair/maintenance will need to be kept readily available at the units.

9.0 HEALTH SAFETY AND ENVIRONMENT

Bidder shall submit the safety manual and operating procedure manual well in advance to the company for review and comments, if any. The Contractor shall also submit a tool preventive maintenance system to exhibit that a pro-active/ predictive system can be in place to avoid unforeseen down -time and valid ISO/DNV certificates. Bidder must strictly follow all the HSE rules and regulations and follow safety rules practiced in the well-site and provide safety gears to their personnel (viz. Coverall, safety shoes, Helmets, Breathing mask, safety glass, hand gloves, PPE kits etc.). The MLU should be fitted with safety equipment as per international practice. MSDS sheets should be available for all the chemicals to be used at site.

10.0 POLLUTION CONTROL

Bidder undertakes that substances or rubbish in any form originating from Contractor's equipment shall not be dumped or discharged at, or around the well location offshore. However, in the event of such dumping or discharge by bidder, bidder shall immediately assume responsibility for the cost of removal of items, substances or rubbish so dumped or discharged and for any resulting pollution or contamination in any form, in the well location and the surrounding sea area.

11.0 INSPECTION AND CERTIFICATES

Company reserves the right to inspect the complete Mud Logging unit, sensors and other related accessories at Contractor's works/workshop or any other suitable place (to be arranged by the bidder) before its mobilization to the first drilling location under this

contract as ascertain & certify its suitability and completeness. Bidder will arrange for testing facilities etc. to the satisfaction of company personnel. Any complaint/ rectification/ replacement etc. as may be advised during such inspection must be set up right before mobilizing the unit to site. Company will not assume any responsibility in this regard whatsoever, leading to delay in completion of mobilization.

Contractor shall acknowledge the company may audit tools and equipment used by the contractor at any time during the contract period. Contractor's personnel at wellsite will ensure free access for Company's inspector/site geologists to the MLU at any time during the contract and will co-operate in carrying out random testing of the tools used for its operation. Upon successful commissioning of MLU at the designated drilling locations company will provide MLU commissioning certificates to the contractor. Additionally, the contractor must generate a monthly working certificate of MLU operations as per format to be provided by OIL and obtain signature thereon of the Company's well site geologist. The MLU commissioning certificate and monthly working certificates as aforesaid must be submitted along with all monthly running invoices/ bills of the contractor for release of payment by Company.

12.0 SERVICES TO BE FURNISHED BY THE COMPANY

The following services shall be provided by the Company at no cost to the Contractor:

All transportation of the Contractors personnel between the company's drilling location and Company designated airport or shore base.

Labour and equipment for loading and unloading the Contractors mud chemicals, Equipment and Supplies at the Drilling Location.

Accommodation, meals, housekeeping services and supplies at the drilling location for the Contractors personnel.

First-Aid and other emergency medical aid for the Contractors personnel at the drilling location to the same extent as furnished to the Company's own employees.

13.0 QUALITY MANAGEMENT SYSTEM REQUIREMENTS

The Contractor will comply with, and take cognisance of, applicable latest editions of all Statutes and Specifications in supporting the contract.

The Terms of the Contract shall apply to all subcontractors engaged by the Contractor and utilised in support of the contract. Implementation of these Terms shall form part of the Contractors responsibilities.

10. SUBSEA WELLHEADS AND CONDUCTOR PIPE

1.0 SCOPE OF WORK

Company requires a subsea wellhead system designed for use in water depth up to 3000 m. The following requirements are mandatory:

a) Positive lock between 18-3/4" high pressure housing and 36" low pressure housing
b) Metal to metal seals
c) Single trip, weight set system of operation
d) Capability to test BOP stack with wear bushing or seat protector in place

Size	18-3/4"
Pressure rating	15,000 PSI
Service	Suitable for H2S service
Application	For use in water depths up to 3000m
Casing Programme	36", 20", 13-3/8"/13-5/8", 9-5/8"/9-7/8" and 7" (liner)
Standard	Should meet API 17 D
Product Specification	PSL Level 3 for Wellhead High Pressure Housing and Casing Hanger, consistent with API 17D section 4.1b., NACE MR-0175
Material Class Rating	DD material class for Wellhead High Pressure Housing, Casing Hanger and Annulus Seal.
Sealing	Weight Set Metal to Metal / Metal end cap seal
Well Head Connector	H4, suitable for 15,000 psi

Section 1: WELLHEAD EQUIPMENT (During 1 Rig operation)

No.	Item Description	Qty initial lot	Qty 2nd lot	Qty 3rd lot
1	36” Wellhead Low pressure Housing c/w 30ft long 36”, 1.5” WT, conductor joint, with compatible connector Internal profile with cam actuated / LH thread preparation 36" X 1.5” WT butt weld preparation down	3	1	1
2	18-3/4” High Pressure Wellhead Housing C/w 30ft long, 20”, 133 lb/ft x 0.625” WT, with plain end (prepared for butt welding with connector) Wellhead housing shall house 13-3/8”/13-5/8”, 9-5/8” / 9-7/8” and 7” casing hangers. 15,000 psi WP, H2S service Wellhead connector profile suiting to 15,000 psi pressure rating Internal profile to accept cam actuated/ LH thread preparation To be able to run with nominal seat protector installed on surface Stainless steel lined ring groove Hydrate seals for 36” and 18-3/4” wellhead housing annulus	3	1	1
3	18-3/4” x 13-3/8"/13-5/8” Casing Hanger complete with pup joint H2S service To have large flow-by area To be designed to prevent the accumulation of cuttings / debris 13-3/8"/13-5/8” BTC box down Lockdown mechanism	3	1	1

	Physical properties equivalent or superior to 13-3/8", 72 lb/ft / 13-5/8", 88.2 lb/ft, Q-125 casing 13-3/8"/13-5/8", 18 ft pup joint, BTC pin Protector installed Machine installation to casing hanger			
4	18-3/4" x 9-5/8"/9-7/8" Casing Hanger complete with pup joint H2S service To have large flow-by area To be designed to prevent the accumulation of cuttings / debris Lockdown mechanism 9.5/8"/9.7/8" Premium box down Physical properties equivalent or superior to 9-5/8", 47 lb/ft, P-110 / 9-7/8", 62.8 lb/ft, LS-140 casing 9-5/8"/9-7/8", 18 ft pup joint, Premium pin end Protector installed Machine installation to casing hanger	3	1	1
5	18-3/4" x 7" Casing Hanger complete with pup joint H2S service To have large flow-by area To be designed to prevent the accumulation of cuttings / debris Lockdown mechanism 7" Premium Box down Physical properties equivalent or superior to 7", 32 ppf V-150 7", 32 ppf, 18 ft pup joint, Premium pin end Protector installed Machine installation to casing hanger	3	1	1
6	18-3/4" Annulus seal assembly	6	2	2

	15,000 psi working pressure rating Metal to metal seals Weight set actuation Universal for all sizes of casing hanger Suitable for H2S service To seal between 18-3/4" housing and 13-3/8"/13-5/8" or 9-5/8"/9-7/8" and 7" casing hangers			
7	Nominal seat protector Protect ID seal area of wellhead body	2	1	
8	Bore Protector, 18-3/4" x 13-3/8"/13-5/8" Protect ID seal area of wellhead body	2	1	
9	Bore Protector, 18-3/4" x 9-5/8"/9-7/8" Protect ID seal area of wellhead body	2	1	
10	13-3/8"/13-5/8" Emergency seal assembly Designed for H2S service	3	1	
11	9-5/8"/9-7/8" Emergency seal assembly Designed for H2S service	3	1	
12	7" Emergency seal assembly Designed for H2S service	3	1	
13	Corrosion Cap To suit 20" wellhead	3	1	
14	18-3/4" Ring gasket, Stainless steel, 15,000 psi MWP	8	1	1
15	18-3/4" Hycar Ring gasket, Stainless steel, 15,000 psi MWP	4	1	1
16	Slope Indicator 0 to 5 Deg	8	1	1
17	Any other tool or equipment required, Contractor to specify details			

Section 2: INSTALLATION & TEST TOOLS (Rental basis)

No.	Item Description	Qty initial lot	Qty 2nd lot

1	36” Wellhead housing running and drill ahead tool Drill ahead Tool to makeup to the internal profile of 36” well head housing Tool should allow the jetting of 36” conductor, and the drilling of 26” hole to the target in one single trip	2	1
2	Running tool 36” Wellhead housing Cam actuated running profile 6-5/8" API Reg box up x 4-1/2" API IF pin down	2	1
3	Running tool 18-3/4” Wellhead housing Cam actuated running profile 6-5/8" API Reg box up x 4-1/2" API IF pin down	2	1
4	Wear Bushing Running and Retrieving tool Tool to have the mechanism to circulate and wash the well head area after the retrieval of bore protectors and nominal seat protectors 4-1/2" API IF box up x pin down	2	1
5	Casing hanger running tool – 18-3/4" For all casing hangers – 13-3/8”/13-5/8”, 9-5/8”/9-7/8” Tool should allow the running of casing hangers, setting pack-offs / seal assembly and testing of BOP against seal assembly in the same trip 6-5/8" API Reg box up x 4-1/2" API IF pin down	2	1
6	Annulus seal and emergency seal running and retrieving tool 6-5/8" API Reg box up x blank down	2	1
7	18-3/4” BOP Isolation Test Tool - Type 18-3/4" 15,000 psi To test the BOP stack when installed on 18-3/4” wellhead Tool to isolate the casing hanger pack off assemblies from test pressure Should allow circulation through tool Should not require the retrieval of wear bushing	2	1
8	BOP Test Plug - Type 18-3/4" 15,000 psi Allow stab in to and seal the casing hanger bore Allow sealing to a wear bushing	2	1

	Allow sealing to bare wellhead Should allow circulation through tool		
9	Drillpipe hang off / Suspension plug tool Details of the BOP shall be provided to the winning Contractor	2	1
10	18-3/4" Well Head housing support system Should support well head in rotary while running 5" cementing stinger	2	1
11	Mill and Flush tool for 18-3/4" wellhead housing, c/w impression block 4-1/2" IF box up	2	1
12	Wellhead jetting tool	2	1
13	Any other tool required – to be specified by Contractor		

Section 3: SPARES FOR INSTALLATION & TEST TOOLS AND WELLHEAD SYSTEM

Contractor to provide list of recommended spares/ tools required for the uninterrupted one rig operations, good for 8 wells.

Section 4: 36" CONDUCTOR WITH MULTI START CONNECTOR

No.	Item Description	Qty
1	36" Conductor Wall Thickness 1.5" Wall thickness Grade X-56 with Multi start connector Box down x Pin up protected with thread protector, Range R-3 and with necessary O-Rings	60 joints
2	36" Conventional Float Shoe (Weldon type) Note: 7 No's of conductors provided in Sr. No.1 above to be supplied with 36" conventional float shoe welded.	7 No's

Section 5: ADDITIONAL WELLHEAD EQUIPMENT (During 2 Rig operation)

No.	Item Description	Qty initial lot	Qty 2nd lot

1	36” Wellhead Low pressure Housing c/w 30ft long 36”, 1.5” WT, conductor joint, with compatible connector Internal profile with cam actuated / LH thread preparation 36" X 1.5” WT butt weld preparation down	3	1
2	18-3/4” High Pressure Wellhead Housing C/w 30ft long, 20”, 133 lb/ft x 0.625” WT, with plain end (prepared for butt welding with connector) Wellhead housing shall house 13-3/8”/13-5/8”, 9-5/8” / 9-7/8” and 7” casing hangers. 15,000 psi WP, H2S service Wellhead connector profile suiting to 15,000 psi pressure rating Internal profile to accept cam actuated/ LH thread preparation To be able to run with nominal seat protector installed on surface Stainless steel lined ring groove Hydrate seals for 36” and 18-3/4” wellhead housing annulus	3	1
3	18-3/4” x 13-3/8"/13-5/8” Casing Hanger complete with pup joint H2S service To have large flow-by area To be designed to prevent the accumulation of cuttings / debris 13-3/8"/13-5/8” BTC box down Lockdown mechanism Physical properties equivalent or superior to 13-3/8" 72 lb/ft / 13-5/8”, 88.2 lb/ft, Q-125 casing 13-3/8"/13-5/8”, 18 ft pup joint, BTC pin Protector installed Machine installation to casing hanger	3	1

4	18-3/4" x 9-5/8"/9-7/8" Casing Hanger complete with pup joint H2S service To have large flow-by area To be designed to prevent the accumulation of cuttings / debris Lockdown mechanism 9-5/8"/9-7/8" Premium box down Physical properties equivalent or superior to 9-5/8" 47 lb/ft P-110/ 9-7/8", 62.8 lb/ft, LS-140 casing 9-5/8"/9-7/8", 18 ft pup joint, Premium pin end Protector installed Machine installation to casing hanger	3	1
5	18-3/4" x 7" Casing Hanger complete with pup joint H2S service To have large flow-by area To be designed to prevent the accumulation of cuttings / debris Lockdown mechanism 7"Premium box down Physical properties equivalent or superior to 7" 32 ppf V-150 7", 32 ppf, 18 ft pup joint, Premium pin end Protector installed Machine installation to casing hanger	3	1
6	18-3/4" Annulus seal assembly 15,000 psi working pressure rating Metal to metal seals Weight set actuation Universal for all sizes of casing hanger	6	1

	Suitable for H2S service To seal between 18-3/4” housing and 13-3/8”/13-5/8” or 9-5/8”/9-7/8” and 7” casing hangers		
7	Nominal seat protector Protect ID seal area of wellhead body	2	1
8	Bore Protector, 18-3/4" x 13-3/8"/13-5/8” Protect ID seal area of wellhead body	2	1
9	Bore Protector, 18-3/4" x 9-5/8"/9-7/8” Protect ID seal area of wellhead body	2	1
10	13-3/8”/13-5/8” Emergency seal assembly Designed for H2S service	3	1
11	9-5/8”/9-7/8” Emergency seal assembly Designed for H2S service	3	1
12	7” Emergency seal assembly Designed for H2S service	3	1
13	Corrosion Cap To suit 20” wellhead	3	1
14	18-3/4" Ring gasket, Stainless steel, 15,000 psi MWP	8	1
15	18-3/4" Hycar Ring gasket, Stainless steel, 15,000 psi MWP	4	1
16	Slope Indicator 0 to 5 Deg	8	1
17	Any other tool or equipment required, Contractor to specify details		

Section 6: 36” CONDUCTOR WITH MULTI START CONNECTOR (During 2 Rig operations)

No.	Item Description	Qty
1	36” Conductor Wall Thickness 1.5” Wall thickness Grade X-56 with Multi start connector Box down x Pin up protected with thread protector, Range R-3 and with necessary O-Rings	20 joints
2	36” Conventional Float Shoe (Weldon type) Note: 2 No’s of conductors provided in Sr. No.1 above to be supplied with 36” conventional float shoe welded.	2 No’s

2.0 Personnel

When required by OIL, One Wellhead Engineer who shall be suitably qualified and experienced with Contractor's equipment and procedures for Installing wellhead shall be provided by Contractor for the performance of the services. Personnel provided should be capable of installing, testing, and repairing (those which are possible) and maintaining all equipment in the field provided by Contractor. The Wellhead Engineer(s) shall have a minimum of five (5) years' experience with wellhead systems and at least two (2) years with the equipment provided hereunder.

S.NO	Description	Unit Of Measurement	Quantity
1	**Subsea Wellhead Service Engineer**	Number	1 per Rig (Duty on Rig)

3.0 LIST OF VENDORS

Contractors must procure the subsea wellheads from any one of the vendors as listed in the vendor list below.

(i) Dril-Quip

(ii) Cameron, Schlumberger

(iii) GE Vetco Gray

(iv) Technip FMC

4.0 Staggered Delivery

(i) Company will place firm order initially for three (3) sets of Subsea Well Heads to be delivered at Contractor's OCTG Yard at Kakinada, India on DDP destination basis. Depending on the progress of well drilling, orders for further sets will be placed as indicated in above Sections.

(ii) Company will place orders for Subsea Well Heads to be delivered at Contractor's OCTG Yard at Kakinada, India on DDP destination basis. All unused Subsea Well Heads systems will be returned to Contractor at the conclusion of drilling campaign. Contractor must submit buy-back charges (minimum 30% of the quoted rate) for all unused set of Subsea Well Heads.

5.0 Inspection, Receipt & Loading

(i) Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company as per Clause No: 8.0 of SCC and at any time during the duration of the contract.

(ii) The successful Contractor, on receipt of the firm quantities of equipment at Contractor's OCTG Yard will mobilize a service engineer at his own cost to check all the equipment and confirm that the item received at Contractor's OCTG Yard are correct and are as per the order.

(iii) Contractor's personnel should be present at Shore Base at Kakinada, during loading and unloading of their equipment/material to and from Marine Vessels.

6.0 Welding of 36" & 20" Pipes on 36" & 18-3/4" WH Housings

The 36" LP Housings and 18-3/4" HP Housings will be supplied with an extension joint of 36" and 20" casing connector. Extension shall be factory welded to the conductor's housing. Weld between housing and extension to be ground flush – 9 No's each

7.0 Subsea Wellhead System shall meet the following requirements:

1. Wellhead system standards shall meet or exceed API 17D, ISO/DIS 13628-4, API-6A, PSL3 requirements and NACE MR-0175 / ISO 15156 (H2S)
2. The housings shall have non-threaded (cam) profile for a cam actuated type-running tool.
3. Bullseye (0-2°) complete assembly with brackets, bolts etc. shall be installed on the ball valve sub below 36" LP housing to check the Conductor pipe vertically at the installation.
4. Bullseye supplied by contractor must be ROV removable post wellhead installation at seabed as and when required.
5. 36" LP Housing shall have a minimum of four 3.0" diameter ports (28.27 square inches total flow by area) for passing drilling and cement returns for which 1 set of Annulus shut-off valves to be provided (1 Set consists of 4 No's of Annulus shut-off valves).
6. Contractor shall supply 36" LP housing complete with ball valve sub for mounting ball valves and Bullseye.

7. The LP ball valve position below LPWHH should be minimum 2.5m from HPWHH land-off point which shall allow enough clearance for ROV to remove ball valve at the end of the well.
8. 36" LP housing be supplied with an internal profile allowing the High-Pressure Housing to be positively latched and locked.
9. 18-3/4" HP wellhead shall Include a contingency sealing area to the BOP connector inlaid with corrosion resistant nickel-based alloy.
10. Seals - Metal to Metal casing annulus seals and provide hanger lockdown at minimum capacity of 750,000 lbs. to counter thermal expansion and pressure-induced up-thrust loads. All wellhead components shall be of design that would preclude production of debris resulting from running / seating wellhead components. All pack-off seals should be rated 15000 psi.
11. Casing hanger and pack-off tools to be actuated/assisted with pressure under BOP stack in single trip to run hanger, set annulus seal and pressure test. Optional tool to utilize weight set design to energize seal with application of weight down.
12. BOP testing shall not require wear bushing retrieval. BOP test capability with Isolation test tool, test plug, and/or wear bushing running tool. With Nominal seat protector in place, the BOPs can be tested with Isolation test tool.
13. All Casing hangers to be rated to 15,000 psi working pressure above casing connection at the casing hanger.
14. All casing hangers in wellhead are rated for 1 million pounds hanging casing loads plus full bore test pressure capacity of 15,000 psi

Note: Hanging capacity & Pressure rating: The manufacturer's stated hanging capacity & Pressure rating for a casing hanger includes the casing thread (normally a female thread) cut into the lower end hanger body.

15. The 9-5/8" and 7" casing hanger internal seal preparation shall be inlaid with corrosion resistant nickel-based alloy.
16. Casing hanger design/profile shall accommodate debris accumulation and permit debris to be displaced from the well bore during circulation/ cementation. The minimum particle flow-by area of 14 sq. inches with 0.5" particle size clearance.
17. Integral hydrate seals between high pressure and Low-pressure conductor housings.
18. Single trip to run hanger/casing, set seal and pressure test the seal and BOP.

19. Single trip to jet in structural conductor pipe and drill out for 20" casing string. Low pressure housing tools have drill-ahead capability.
20. Single trip to run wear bushing and pressure test BOP stack.
21. The high pressure and low-pressure housing systems may be rigidly locked together to provide minimum of 5,250,000 ft.-lbs. of bending resistance.
22. Pressure rating of the HP well head and seal assemblies shall be 15,000 psi.
23. Contractor to provide the required premium thread casing hanger with corresponding premium thread pup joint for compatibility with the casing to be used in the well. Contractor to co-ordinate with the OIL for thread confirmation.
24. Temporary Abandonment Cap – Cap System should Permit injection of inhibitor with ROV

Exhibit 11

11. WELL TESTING SERVICES FOR ULTRA DEEP OFFSHORE

A. SCOPE OF WORK:

Oil India Limited (OIL is planning to undertake Ultra Deep Offshore Exploration campaign by deploying two (02) Drilling Units (Floater / Drill ships). About 8 wells are envisaged to be drilled during the term of the 3 years Bundled Serviced Contract by the 2 Drillships which will be deployed in staggered manner. The wells are expected to be drilled in water depths ranging from 500m to 3000m. In connection with this exploratory drilling campaign, OIL seeks to hire Well Testing Services comprising (i) Tubing Conveyed Perforation (TCP), (ii) Drill Stem Testing (DST), (iii) Subsea Test Tree (SSTT), (iv) Surface production testing (SPT), (v) Well activation services (NPU), (vi) Coiled Tubing Unit with Pumping Unit & CTLF and (vii) Slickline Services suitable for 15000 PSI working pressure, sour service as per NACE (National Association of Corrosion Engineers) Specifications MR-01-75 (latest edition).

The quantum of well testing jobs in the above wells may vary depending upon the results of LWD, Wire Line Logs & Drilling evidence in 12.1/4", 8.1/2" & 6" open Hole.

Bidder shall provide complete Well Testing Equipment (Surface Production Testing Equipment, Drill Stem Test equipment, Tubing Conveyed Perforation equipment, Subsea Test Tree equipment, Nitrogen Pumping Unit (NPU), Coiled Tubing Unit with Pumping Unit & CTLF and Slickline equipment) with compatible X-overs between its tools and drill stems of the rig, including all necessary tools & accessories and competent operating crew to carry out production testing of ultra deep offshore wells conditions (3000 m water depth).

Bidder shall be responsible for providing compatible units as per zonal requirements of Rig Safety like Zone 0, Zone 1 etc. and rig electrical supply. Bidder shall provide any items/equipment for making its units of various services/ equipment compatible with the rig power supply for which Bidder shall interact with the rig contractor for timely mobilization and commencement of services.

For transportation of all Bidder's equipment from shore base to different rigs and rigs to shore base, Bidder will provide proper cargo basket with packing and sling pads. Bidder will deploy his personnel at shore base to coordinate materials movement.

REPORTING OF HAZARDS: While carrying out operations at the OIL's well, the Bidder shall report as soon as possible any evidence, such as, mud loss, over-flow, gasification, or any other complication in the well which may indicate or is likely to an abnormal or dangerous situations and to immediately take first emergency control steps conforming to good industry practice and safety regulations with intimation to OIL.

The Bidder shall provide all the required fishing tools for their equipment/ tools lowered in the well.

All accessories connecting Bidder's items above top of well testing equipment, like bails, slings, restrainers etc. is Bidder's responsibility.

All the equipment offered by the Bidder should be usable on Anchor Moored /DP.
Provisions of all extra safety jigs, which are unique to OIL such as full body harnesses etc. are Bidder's responsibility.

Bidder will obtain necessary licenses/permissions for storage/transportation of explosives/materials for providing the services. However, OIL shall provide necessary assistance in the form of recommendatory letters for availing licenses /permissions.
Bidder should provide proper lifting sub for all its BHA components.
Bidder has to submit detailed technical literature and operations manual in hard and soft format of each equipment.

The Bidder shall provide the necessary documentation and equipment details as required by the Rig's Warranty Surveyor to get the same vetted and for the acceptance of equipment and their placement on deck, cooling requirements etc. The Bidder shall be responsible for ensuring that all the equipment(s) provided satisfies Rig Warranty Surveyors requirements /acceptance. If required, the bidder will be responsible for replacing the equipment to satisfy Warranty surveyor's requirements at no additional costs.

Any certification required by the Rig Service provider / Rig Warranty Surveyor for onboarding the Well Testing equipment on Rig, the service provider shall comply with the requirement without any additional cost implication to company.

The services in Open hole DST (single / multizone) for 8.1/2" Hole will be required on Optional basis & Bidder shall be able to carry out the DST Operations in mud.

For well test package vetting, following activities would be required:

a) Submission of all documents stated in Rig Warranty Surveyor's Memo on Well testing by the Well test service provider.
   i) Well Test Design Report including Process P&ID & Layouts
   ii) Flaring Simulation Report to determine cooling package requirements.
b) Layout review to check the loading on the rig to ensure sufficient structural strength (Rig service provider's responsibility).
c) Sea fastening Study by 3rd party to design adequate securing for all well test equipment, using 17deg list condition with an additional 10 deg static angle applied to reflect inertial forces due to rig motions in the damage condition.
d) Sourcing of AR-AFFF Foam Monitors for firefighting from Drilling Rig.
e) Staging all equipment at an onshore location for warranty Surveyor inspection prior to shipping, including certificates
f) Offshore Inspection and Testing by warranty Surveyor after installation

A few key notes for Well Test service provider related to the above requirement:

a) Equipment must be Maritime Standard, i.e. Class society design compliant.
b) Equipment Certification by Classification Society must be up to date, i.e. inspection & testing records.
c) Ex Inspection compliance.
d) Well Test F&G Detection and ESD shall be tied into the RCS for notification and shut down. ESD valves must be fire rated.
e) Layout must consider adequate escape routes.
f) For Fuels, Methanol & Other Chemicals use are planned, special storage and handling from the arrival onboard and throughout operations is required.
g) All connections to rig equipment (i.e. choke manifold) must have minimum double block & bleed isolations installed

The details of Work / Services to be performed under the Contract are explained in the subsequent paragraphs.

The maximum anticipated flow rates for oil and gas during well testing is expected to be 1 MMSCMCD gas and 400 m3/day oil.

1.1 SURFACE PRODUCTION TESTING (SPT) SERVICES:

The surface production testing equipment shall be capable of effectively deal with formation fluids produced during production testing. The production testing service shall consist of following:

a) Service of surface equipment like Flow head, choke manifold, oil and gas separator with oil and gas flow meter, pumps, heat exchangers, vertical surge tank, automatic remote controlled surface safety valves, adequate surface flow lines, temperature/pressure and flow measurement, Data acquisition facilities, ESD systems, spares and any other materials required to perform production testing services with an objective to deliver the followings:
    i) Flow rate data acquisition.
    ii) Reservoir pressure & temperature survey and analysis
    iii) Representative reservoir fluid collection and fluid sample analysis, compositional analysis and PVT analysis (Two PVT samples per Zone).
    iv) To overcome operational complications such as hydrate formation, paraffin problem, sand incursion etc.
    v) Well deliverability, AOFP-for gas wells, skin, permeability, reservoir boundaries (presence of faults, oil-water contacts) etc. Hydrocarbon In-place estimates.
    vi) Fluid Analysis:
        (A) Onsite fluid analysis and Tests as applicable on Oil / Gas samples should include:
            - Density / Specific gravity / Deg API
            - pH
            - Water Salinity
            - Pour Point
            - BS&W
            - GC up to at least C6+
            - Measurement of Hydrogen Sulphide (H2S) & Carbon Dioxide (CO2) by Draeger tubes

(B) PVT Samples: The analysis of PVT samples to determine the following parameters:

- Saturation Pressure (Bubble point / Dew point)
- Oil/Gas compressibility.
- Fluid density at bubble point / dew point and Reservoir conditions
- Constant composition expansion
- Flash GOR, molecular mass (sp. gravity)
- Stock tank oil / condensate density, composition up to C36, molecular mass.
- Flash Gas composition up to C12 and Z factor determination
- Reservoir fluid composition up to C36
- Stock tank and reservoir oil / condensate & gas viscosity.

b) Phase Diagram construction

c) Preparation & submission of Interim Well Test Report within 5 days and Final Well Test Report within 10 days from the completion date of testing for each zone comprising of the following but not limited to:

- Sequence & methodology of well testing events,
- Well test data, analysis and interpretation report,
- Well fluid sample report (surface & bottom hole PVT),
- Gradient Survey Report, if any,
- Actual vis-à-vis planned timelines
- TCP-DST String Running in Details including DST String Rupture Disk calculation sheet, Space out sheet, pressure test sheets, packer set etc.,
- Lessons learnt & optimization for future well test operations.

d) Production Testing Manpower for (i) Pre Job planning and post job management (ii) Hydraulic testing (iii) Flow initialization and testing (iv) Operation and maintenance of surface equipment (v) Relief valve calibration (vi) Sample collection and analysis (vii) Trouble shooting and (viii) System Inspection (ix) Test data interpretation (x) preparation of daily & post operation reports and (xi) Any other services required to ensure standard international practices for Production Testing operation.

e) To rig up setup for Production Testing tool/equipment, piping line-up for burner boom, equipment servicing and testing, spare part stock etc. at Company's well site / Drilling Unit.

f) Documentation to be provided may include but not limited to equipment certification, inventory report, recent pressure test chart, relief valve calibration report, P&I and layout drawings, well test on paper for each zone, well test programs for each zone, operating procedures and post job report.
g) Details of equipment & manpower to be deployed for well testing are enumerated under Annexure I & II respectively.
h) To flare produced hydrocarbons using burner booms & burner heads (Provided by Rig contractor). Necessary fuel (Propane) for Pilot Burner shall be provided by Well Testing Service provider.
i) Any water production shall be routed overboard.

1.2 WELL ACTIVATION SERVICES

After perforation, if the well does not displace on its own then services of NITROGEN PUMPING UNIT (NPU) will be required to activate the well with or without Coiled Tubing Unit. The Bidder shall provide NPU services with all necessary equipment for well activation jobs at Drilling Unit. The NPU service shall consist of the following:

a) Supply of suitable NPU with required spare parts, surface pipe fittings (including high pressure), and any other equipment/tools, materials required to provide unloading/well activation services.
b) Manpower for (i) job planning (ii) Rig up/down, operation & maintenance of the unit etc. (iii) Job evaluation (iv) Preparation of post job report and (iv) any other service required to ensure efficient operation.
c) Operation & Maintenance of NPU.

1.3 TUBING CONVEYED PERFORATION SERVICES & DRILL STEM TESTING SERVICES

All the downhole sub-assemblies of the TCP-DST string should be rated to 15000 psi WP and 350 deg F and should be NACE certified across all temperature ranges (i.e. 0 to 350° F). The DST tools should have OD suitable to run inside 4-1/2", 7" and 9.5/8" or 9.7/8" liner / casings. All tools should have premium end connections without any elastomers.

Note: Design Pressure & Temperature may vary upon pore pressure & temperature prediction.

Bidder shall provide fishing neck OD size to enable Operator to select the required fishing tool. The quantity per string indicated is the minimum number. If Bidder indicates

requirement of any addition, element / quantity in the string for performing the job the same shall be included without any cost implication to company.
Permitted variation in OD of DST +0.5”/-0.25”. Packers will have OD to match the casing size-weight. Permitted variation in ID of DST tools +0.5”/-0.1”.

In order to meet the requirement of availability of DST tools all the time for successive tests that Bidder should keep one set of all tools as listed from S. No. 1-16 with mandatory back-ups (1 for 1). However, the payments shall be made for only one set of TCP-DST tools.

All the DST tools should be readily available for use all the time. No extra time shall be provided for redressing / repair of the tools between two successive tests.

2.0 GENERAL NOTES

a. Details of Tools/Equipment and their operational requirement are given in Annexure-I. Any equipment, tools, consumables and services etc. that are not mentioned elsewhere in the tender but required to complete the scope of work shall also be made available without any additional cost implication to the company.

b. The Scope of Work under operation and maintenance of the equipment includes all that are required for safe, trouble-free and uninterrupted operation as per sound industry practices. The Bidder shall undertake operation and maintenance (O&M) of the equipment forthwith after supply and shall be responsible for arranging all resources including competent manpower as per requirements, its bye-laws & other legislations in force; employee insurance & benefits and all resources / facilities for continuous twenty four hour operations on shift basis; public liability insurance, routine & scheduled maintenance including running repairs and provisioning of relevant spares and consumables in relation thereto.

c. The Bidder shall maintain and preserve all records and documents relating to the performance of the Work mentioned in SOP and anything else that may reasonably be required to preserve for a period of two years from completion of this Contract.

d. Supply of all Tools/ Equipment/ Manpower/ Consumables / contingency tools for any trouble shooting operations required for ensuring trouble free efficient operation for the assigned services is the sole responsibility of the Bidder.

e. The tubings with accessories given below would be supplied under the scope of Bundle Services contract.

3.1/2" tubing, 12.70 ppf, P-110 or higher, premium connection PH-6*	2430 m
4.1/2" tubing, 26.10 ppf, P-110 or higher, premium connection PH-6*	4500 m
4.1/2" tubing, 15.20 ppf, P-110 or higher, premium connection PH-6*	1800 m
2.7/8" Tubing, 7.9 ppf, P110 or higher, premium connection PH-6* (OD of the tubing with coupling shall be meet the drift ID requirement of 4.1/2" x P110 Liner)	1230 m
2.3/8" Tubing, 5.5 ppf, P110 or higher, premium connection PH-6* (OD of the tubing with coupling shall be meet the drift ID requirement of 4.1/2" x P110 Liner)	1230 m

Note: *PH6 or equivalent, Multiple time make up / break up, without losing its sealing capability

f. All x-overs required for the above string to connect WT tools and equipment would be supplied by Bidder.

g. All Pressure Test Subs required for Pressure Testing of DST – TCP BHA, 2.7/8" 3.1/2", 4.1/2" Tubings while running in downhole shall be made available by the bidder with the same BHA, Tubing sizes size so that Tubing elevators for different sizes of Tubing Strings need not be changed.

h. The Bidder shall make themselves available for a joint discussion to formulate pre job planning after the award of Contract and prior to mobilization of equipment & services to Rig without any extra charge to OIL.

3.0 REFERENCE STANDARDS:

The total design and service shall be governed by the following reference standards wherever applicable –

1	API Spec 5CT	Specifications for tubulars and threads
2	API Spec 6A	Specifications for valves and wellhead equipment
3	API Spec RP 17B	Recommended practice for flexible pipes
4	API RP 44	Recommended practice for sampling petroleum reservoir fluids.
5	API RP 520	Recommended practice for sizing, selection and installation of pressure relieving devices.
6	API RP 521	Recommended practice for pressure relieving and de-pressuring systems
7	ASME-Section-VIII Divn. I and II	Rules for construction of pressure vessels
8	ANSI/ASME B 31.3	Chemical plant and petroleum refinery piping.
9	API RP 54	Recommended practice for Safety and health for oil & gas well drilling and servicing operation.
10	API spec 5L	Specifications for Oil & Gas pipeline
11	IRP-4	Industry Recommended Practices – Volume 4 (2012) for Well Testing and Fluid Handling
12	API RP 19B Section-1/RP-43	Recommended practice for well perforators

All International practices for equipment and personnel with respect to HSE standards needs to be strictly complied with for offshore operations.

4.0 PERSONNEL:

a) The Bidder shall provide competent personnel with requisite experience & qualifications as per the Annexure-II on a round-the clock basis. OIL reserves the right to decide on the engagement of these personnel on the basis of verification of relevant documents prior to engagement.

b) The Bidder shall confirm along with their bid to submit the detailed biodata and supporting documents regarding academic qualification and experience of all the crew members to be deployed under the Contract as per Annexure-II, if awarded with the contract. The Bidder shall submit CV of the personnels to the company

within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for-Company's approval. The Bidder shall not deploy its personnel unless cleared by the Company.

c) Personnel deployed should be conversant with relevant safety practices.

d) Personnel should have good working knowledge in English.

e) If the Bidder is unable to provide the personnel approved by the Company and seek for deployment of alternate personnel having requisite qualification and experience set forth in the Contract, the Bidder may do so by taking prior approval from Company. In the event of change of manpower, the Bidder shall provide proper justification along with supporting document to the satisfaction of Company.

f) The Well Test Coordinator shall head the team of Bidder's crew and shall carry out all the jobs in consultation with Company's representative. The Well Test Coordinator shall be the single point of contact between the Company and Bidder and shall be responsible for working closely with the Company to apply the appropriate planning, design and execution to benefit both the Company and the Bidder by offering specific solutions to cater to requirements. He must be available at well-site round the clock.

g) DST / TCP Specialist, SSTT Specialist, Testing Supervisor and Well Test coordinator must be available for the entire testing operation at the Drilling Rig.

h) The Bidder may replace their personnel during their due off/ leave provided equivalent category of personnel is deployed and subject to approval from Company on their credentials.

i) The Bidder shall ensure that all the personnel have a full medical examination in accordance with the accepted medical standard prior to engagement. In Case of any medical emergency/treatment of Bidder's personnel's, the Bidder shall be responsible for their treatment i.e. all such treatment cost has to be borne by the Bidder.

j) The Company reserves the right to disqualify a person in case of indiscipline, unfit due to medical reason, incompetence etc. to Work under the Contract.

k) Bidders may deploy additional personnel, if required, by getting prior approval from the Company. Such additional personnel shall be provided by the Bidder at their own cost.

5.0 RESIDUAL LIFE OF EQUIPMENT AND TOOLS:

The residual life of all the SSTT, SPT, NPU, CTU with Pumping Unit, PCTLF and Slickline equipment shall not be less than 5 (Five) years as on the original date of BCD. The equipment shall be certified after the issue of LOA by third-party certifying agencies like DNV/LLOYDS/ABS/BV etc. at the cost of the Bidder. All credentials such as manufacturing documents, linking serial nos. embossed on the equipment offered with detailed specifications, must be submitted at the time of on-hire survey.

Notes:

(a) The Contractor shall agree to maintain the equipment in good operational condition throughout the contract period. The Contractor shall provide and maintain sufficient quantities of spare parts, tools, consumables etc. that are necessary for maintenance and operation of the equipment at no extra cost to Operator.

(b) The Contractor must provide SSTT services confirming to good oil field practices comparable to international standards.

(c) The Contractor shall ensure that the offered equipment are complete in all respect to carry out the operations specified in Contract documents.

(d) The Contractor shall also quote for any additional item which is not listed in the Contract document but is essential for operation and their rates shall be included within the line items mentioned in Schedule of rates.

6.0 SAFETY, HEALTH AND ENVIRONMENT:

Bidder shall comply with applicable environmental laws, statutory regulations as applicable to Oil Mines in India.

The Bidder is required to provide all its personnel with Personal Protective Equipment as per international practice, which may include, as appropriate, but without limitation, the following:

a. Safety Helmet
b. 100% cotton or fireproof overalls
c. Safety Foot ware
d. Safety Goggles
e. Other PPE, including gloves. Safety goggles/visor, hearing protection, safety belts etc.

7.0 CONTRACTOR'S SUPPLY BASE:

The Bidder should maintain their onshore supply base/yard in Kakinada or its nearby area. The Bidder's equipment shall arrive as per mobilization notice and maintain them in their base (unless same asked for other site by OIL) for further transporting to respective rigs as and when required.

The Bidder's onshore supply base / yard should be equipped with all the facilities which will be required if the equipment / tools are required to be changed / serviced/ repaired, which cannot be done at the Drilling Unit. This requires good coordination between the Drilling rig and the Bidder's base during Well Testing Services. All costs associated with establishing and running such a facility will be to the Bidder's account.

The bidder's base/yard should be well equipped with proper storage facilities. Safe storage & upkeep of all equipment's along with associated tools at their warehouse shall be sole responsibility of contractor at no extra cost to OIL. Bidder shall hold dedicated skid for transporting the equipment from their base to rig.

The transportation of bidder's equipment / tools from and to bidder's supply base to Shore Base at Kakinada is Service Provider's responsibility at their own cost.

8.0 TOOLS/EQUIPMENT/SPARES/CONSUMABLES:

The Bidder shall provide tools/equipment for the complete services. Such equipment & tools shall be safe for operation, meeting HSE / Statutory requirements, effective and accurate to measure well test parameters and productivity. The Bidder shall keep sufficient back-up tools and equipment, spares, elastomers, redress kits, etc. in order to ensure uninterrupted services. An indicative list of tools and equipment are given as under. Any additional tools/equipment required to fulfil the scope of work but not covered in the list are also to be supplied by Bidder at no extra charge.

9.0 WELL TESTING SERVICES FOR EACH WELL:

9.1 Sub Sea Test Tree (SSTT) Services:

The contractor shall provide 15K Sub Sea Test Tree (SSTT)-(Electrohydraulic System) along with accessories in operating condition and services suitable for carrying out

production testing of exploratory wells drilled by floater Drilling Units at offshore locations in water depth up to 3000m.

The SSTT (Electrohydraulic System) equipment version to be supplied should be of a proven design and technology and to be actually in use in the oilfield industry for at least three years with industry recognized track record.

The details of the required Subsea Test Tree (SSTT) and accessories for each well suitable for 15000 PSI working pressure, 350 Deg F, sour service as per NACE (National Association of Corrosion Engineers) Specifications MR-01-75 (latest edition) are as under and must be suitable for well conditions. Following mentioned quantity is for one well the same quantity is required for all other wells.

A.	SUBSEA TEST TREE	
Sl. No.	Item	Qty
1	SSTT assembly with all accessories suitable for operation in water depth of more than 3000 meters (Electrohydraulic System)	01 set + 01 set (Back up) Details of Back up tools given at clause 1.1 of Annexure I
2	Retainer Valve suitable for operation in water depth up to 3000 meters	01 No + 01 No (Back up)
3	Sub Sea Electrohydraulic control system with Emergency Release Mechanism & Control panel	01 No + 01 No (Back up)
4	Lubricator Valve	01 No + 01 No (Back up)
5	All necessary Crossovers required for connecting SSTT, Retainer Valve, Lubricator valve, fluted hanger, slip joints etc. with the production string and landing string.	01 No + 01 No (Back up)
6	Chemical Injection Pump for hydrate prevention	01 No + 01 No (Back up)
7	Subsea Umbilical with hose reel (of suitable length)	01 No + 01 No (Back up)
8	Fluted Hanger for Wellhead/Wear Bushings	01 No + 01 No (Back up)
9	Pump out Sub	01 No + 01 No (Back up)

10	Any other connections for crossing over and changing over to hook up the above equipment in order to facilitate their use may be provided.	As required

9.2 Surface Production Testing (SPT) Services:

The details of the required Surface Production Testing (SPT) Equipment and accessories suitable for 15,000 psi working pressure and 350 Deg F, sour service as per NACE MR-0175 (Latest Applicable Edition) are as follows. Following mentioned quantity is for one well the same quantity is required for all other wells.

A.	SURFACE PRODUCTION TESTING (Package)	
Sr. No.	Item	Qty
1.	Surface Flow head /Control Head with hydraulic actuator for flow valve, Swivel & Crossovers	01 set
2.	Stiff Joints	01 set
3.	Choke Manifold & accessories	01 set
4.	Data / Injection Header	02 nos.
5.	3" x min. 45 ft long Flexible Flowline (Coflexip hose) of suitable length for connecting Flow head with standpipe and choke manifold, with x-overs	02 nos.
6.	Steam Heat Exchanger with Steam Generator	01 no.
7.	Three Phase Test Separator-1440 psi WP	01 no.
8.	Surge Tank	01 no.
9.	Transfer Pump	01 no.
10.	Piping Package. 3" 1502 for high pressure; 3" & 4" hammer unions for downstream, Straight pipes & Swivel/Elbows of suitable length for connecting surface equipment.	01 set
11.	Chemical Injection Pump	01 no.
12.	Surface Pressure & Temperature Recorders	01 set
13.	Dead Weight Tester	01 no.
14.	ESD Panel for shutdown	01 set
15.	Oil Manifold/ Diverter	01 no.
16.	Gas Manifold/ Diverter	01 no.
17.	Lab Cabin	01 no.

18.	Air Compressor	02 nos.
19.	Sand Filter / Desander System with electronic sand detection facilities (15 K)	01 no.
20.	Surface Safety Valve	01 no.
21.	Well Test Workshop Container with Accessories	01 no.
22.	Surface Testing Data Acquisition Network	01 no.
23.	Data Acquisition Computer	01 no.
24.	Sample Bottles / Samplers	
	Conventional Gas Samplers, 1500 PSIG, 600 CC, IATA confirming	8 nos.
	Dead Oil Sample Cans, 1 Ltrs, IATA Confirming	20 nos.
	Dead Oil Sample Cans, 5 Ltrs, IATA Confirming	5 nos.
	Dead Oil Sample Cans, 10 Ltrs, IATA Confirming	5 nos.
	Water Sample Bottles, 1 Ltrs, Plastic or Glass	20 nos.
	Labels & Consumables for all the above	1 nos.
25.	PVT Samplers	4 Set
26.	Oil Barrels to collect Waste Oil, BS&W and oil contaminated water	1 Package
27.	Any other item(s) required, but not mentioned above, including connections for crossing over and changing over to hook up the above equipment in order to facilitate their use on rig, may be provided	As reqd.

9.3 Well Activation (SPT) Services:

The details of Well Activation Packages are as below:

B.	WELL ACTIVATION (Package)		
SL No	ITEMS	UNIT	QTY
1.	Nitrogen Pumping Unit (NPU) with all accessories. (N2 conversion from liquid to gas will be at Bidder's account. Payment shall be made for Liquid Nitrogen against mobilized quantity as per the rate quoted by the Bidder. However, mobilization notice for liquid nitrogen shall be issued with a mobilization period of 14 days.) The unit shall meet the following minimum requirement:	Package	01

	Max Working Pressure: 15000 psi Max Flow Rate (SCFH): 90000 SCFH Note: Any other equipment required with Nitrogen pumping Unit for successful well activation services on a Floater / Drillship unit but not mentioned above shall be under Bidder's scope.		
2.	Surface piping and accessories	Set	01
3.	The minimum capacity of liquid nitrogen tank shall be 2000 gal. The Bidder should ensure continuous delivery of nitrogen during operations.	2000	10

9.4 Tubing Conveyed Packages (TCP) Services:

The details of Tubing Conveyed Packages (TCP) are as below:

Bidder to provide all the down hole sub-assemblies of the TCP string rated to 15000 psi WP and 400°F and shall be H2S and other corrosive fluid resistant.

Bidder shall ensure that TCP equipment with accessories shall be compatible with DST equipment and both (TCP & DST) should be able to run in single run.

C.	TUBING CONVEYED PERFORATION (Package)		
Sl. No.	ITEMS	UNIT	QTY
1.	Redundant firing head (HDF/HDF) and (HDF/BHF)	No.	1
2.	Hydraulic Firing Head Stand Alone	No.	1
3.	Mechanical Firing head Stand Alone	No.	1
4.	Automatic gun release assembly activated with gun firing action	No.	1
5.	Mechanical gun release assembly	No.	1
6.	Pressure operated under balance valve for use with hydraulic firing head, actuated by applying pressure through tubing without exposing the casing to applied pressure.	No.	1
7.	Portable surface shot detection kit with data acquisition system	No.	1

8.	Pup joints and tubing joints for TCP	No.	Min. 2 each
9.	Safety spacer for vertical shock absorption	No.	1
10.	Bull plug	No.	1
11.	Ported Flow Sub with Glass / Ceramic Disk below Ports along with Redress kit.	No.	1

Bidder shall provide TCP tools containers rated for 400°F & 15000 PSI with provision of the following:

- Shall have the provision for flowing the well, shot detection, Radioactive markers for correlation, hydraulic firing heads with time delay, drop bar firing, safety spacer for vertical shock absorber, Gun release assembly for shoot and drop, mechanical shock absorber and pressure operated underbalance valve.
- Contractor shall provide any other item, not mentioned above but required for successful TCP operation.
- Shall be Suitable for S&P and S&D
- Shall be Suitable for 4.1/2", 7″ & 9 ⅝″/9.7/8" liners/casings.
- Shall be Suitable to use 2.7/8", 4 ½″ and 7" HSD guns.
- Tensile strength at minimum yield for TCP tool: 148 Klbf or more
- Should be H2S & other corrosive fluid resistant.
- Should have sufficient spares and consumables for continuous testing the objects.

The details of Consumables for Perforation Services are as below

Sl. No.	**Perforation Guns and Charges** **Minimum Charge Performance required as per API 19B Sec-1, RP-43** (API 19B/ API RP 43 certificate needs to be provided)
1.	**Perforating guns for 9.5/8" or 9.7/8" Casing:** Casing Gun Size -7" Shot Density -12 spf, 135/45 deg EHD – 0.43" Penetration – 43.15 inches
2.	**Perforating guns for 7" Casing / Liner:** Casing Gun Size - 4.5" Shot Density-12 spf ,135/45 deg

	EHD – 0.42 in Penetration – 35.97 inches
3.	**Perforating guns for 4.1/2" Liner:** Casing Gun Size - 2.7/8" Shot Density – Minimum 6 spf, 60/120 deg EHD –0.30" Penetration – 26 inches Note: OD of 2.7/8" TCP gun assembly shall pass through Drift ID of 4.1/2" Liner.

Other Terms and Conditions:

a) The Contractor shall keep the tools and related accessories for operation, repair, maintenance etc. at its own cost.

b) Provision shall be made for GR-CCL control, fishing of drop bar using well head pressure control equipment with the accessories for TCP operation. Wire-line unit service provider will provide unit with cable and pressure control equipment. Suitable connection from unit and cable head to TCP equipment, if required, shall be provided by Bidder. These services will be treated as depth determination services for all purpose.

c) The TCP Services are to be provided with all related accessories & equipment so as to be capable of running all relevant tools as given above and should be capable of performing all the services as detailed in specifications above. Equipment, tools & services shall conform to the specifications given above and should perform accordingly. The tools under this Contract have to operate to their rated specifications including temperature and pressure ratings as indicated in Contract against specific tool literature/catalogue of the Contractor.

d) The Bidder's equipment should be free of all the defects (physical & Latent) and would be accompanied by Inspection reports confirming that the tool confirms to either the "New" or "Used" inspection requirements as per standard tool inspection procedures. The Bidder should have an inspection & maintenance program for all the equipment that includes magnetic, visual, dye penetrant and ultra-sonic or eddy current inspection methods to ensure and prevent rig site failures. The inspection method and schedule of inspection should be provided by the Contractor at the commencement of the Contract.

e) The bidder shall provide all the required fishing tools for their equipment/ tools lowered in the well. Fishing of drop bar or any such item (in case of TCP or TCP-DST job) would be carried out. Fishing tool with necessary crossover shall be provided without any extra cost to OIL.

9.5 Drill Stem Testing (DST) Services:

The details of Drill Stem Testing Packages are as below:

Bidder to provide all the down hole sub-assemblies of the DST string rated to 15000 psi WP and 400°F and shall be H2S and other corrosive fluid resistant. The DST tools shall be able to run in 4.1/2", 7" & 9 5/8" or 9 7/8" liner / casings, tensile strength shall be 300-320 klbf. Contractor should ensure that DST equipment complete with all accessories shall be compatible with TCP equipment and both (TCP & DST) should be able to run in single run.

D.	DRILL STEM TESTING (Package)		
Sl. No.	ITEMS	UNIT	QTY
1.	Single shot safety circulating valve	No	1
2.	Down hole safety valve with Pump Through	No	1
3.	Annulus / Tubing pressure operated, re-closable circulating valve (Multi cycle) with capability of unlimited number of times cycle with different position well test, blank and circulating position.	No	1
4.	Pressure control tester valve with hold open assembly	No	1
5.	Pipe tester valve with auto fill flapper	No	1
6.	Gauge carrier (to carry at least 4 quartz gauges)	No	1
7.	Quartz gauge (15000 psi and 400° F) with down hole batteries for carrying out 180 hrs tests.	No	4
8.	Radioactive marker sub	No	1
9	a) Retrievable packer (with option of hold down for pumping thru tubing) for 4.1/2" casing / Liner. - Packer setting should be non-rotational type, straight pickup & release type considering depth of the well. - Packer should be able to hang the TCP guns below - Compatible to run with TCP perforation operation	No	2

	Slip joints, x/overs, drill collars with premium connections along with any other accessories to be provided with this item.		
	b) Locator Tube Sea Assembly (LTSA) for 2.7/8" and 2.3/8" Premium Tubings with necessary packer for 4.1/2" Liner.	No	2 each
10.	Retrievable packer (with option of hold down for pumping thru tubing) for 7" casing / Liner. - Packer setting should be non-rotational type, straight pickup & release type considering depth of the well. - Packers should be able to hang the TCP guns below - Compatible to run with TCP perforation operation Slip joints, x/overs, drill collars with premium connections along with any other accessories to be provided with this item.	No	2
11.	Retrievable packer with option of hold down for pumping thru tubing) for 9-5/8" or 9-7/8" Casing. - Packer setting should be non-rotational type, straight pickup & release type considering depth of the well. - Packers should be able to hang the TCP guns below - Compatible to run with TCP perforation operation Slip joints, x/overs, drill collars with premium connections along with any other accessories to be provided with this item.	No	2
12.	Surface read out (SRO) facility for reading the quartz gauge data at the surface while recording down hole using Wireless system for gauges down hole for pressure data transmission to surface. Additionally, provision for lowering gauges on mono bore cable with LINK system should also be provided	No	1
13.	INLINE bottom hole sample chamber (15,000 PSI & 400°F) with all necessary equipment and accessories to assist in downhole	No	1 each

	sampling for 9.5/8" or 9.7/8" casing, 7" casing / liner & 4.1/2" casing / liner.		
14.	Tools and Parts	No	1
15.	Subs and all necessary X-overs	No	1+1 Back up
16.	Suitable Jars, safety joints, drill collars with premium connections and slip joints should be provided along with DST string for running above the retrievable packers (as required) for sl. no. 9, 10 & 11 above	No	1 each
17.	Open Hole Packer for Testing 8.1/2" Hole for Multizone testing in 8.1/2" Hole **– Optional:** (i) Retrievable packer (with option of hold down for pumping thru tubing) for 8.1/2" Open Hole for single zone or multizones (one after another). (ii) Packer setting should be non-rotational type, straight pickup & release type considering depth of the well. (iii) Slip joints, x/overs, drill collars with premium connections along with any other accessories to be provided with this item.	No	2

Notes:

(i) Surface read-out tools shall be minimum 350 Deg F rated.

(ii) The Bidder shall provide hydraulic packer setting tools for items Sl. No. 9.a, 10, 11 & 17 above without any additional cost to Company.

(iii) The DST Equipment shall also be deployed for testing in 8.1/2" open hole along with open hole packer (Sl. No. 17) in mud for single zone and or multizone (one after another) in single run. The multizone testing in open hole will involve testing of bottom most zone first and upper zones as next higherup ie., Zones will be tested one after another from bottom. The open hole packer shall be able to set and unset for such multizone testing operation.

Other terms & Conditions:

1) The Contractor shall keep the tools and related accessories for operation, repair, maintenance etc. at its own cost. The Contractor shall keep the necessary cross-overs and connectors required for using the wire-line cable/unit.
2) Permitted variation in OD of DST +0.5”/-0.25”. Packers shall have OD to match the casing size-weight. Permitted variation in ID of DST tools +0.5”/-0.1”.
3) The containers are to be provided with all related accessories & equipment so as to be capable of running all relevant tools as given above and should be capable of performing all the services as detailed in specifications above. Equipment, tools & services shall conform to the specifications given above and should perform accordingly. The tools under this Contract have to operate to their rated specifications including temperature and pressure ratings as indicated in Contract against specific tool literature/catalogue of the Contractor.
4) The Bidder’s equipment should be free of all the defects (physical & Latent) and would be accompanied by Inspection reports confirming that the tool confirms to either the “New” or “Used” inspection requirements as per standard tool inspection procedures. The Bidder should have an inspection & maintenance program for all the equipment that includes magnetic, visual, dye penetrant and ultra-sonic or eddy current inspection methods to ensure and prevent rig site failures. The inspection method, Performa, schedule of inspection should be provided by the Contractor at the commencement of the Contract.
5) The contractor shall provide all the required fishing tools for their equipment/ tools lowered in the well. Fishing of drop bar or any such item (in case of TCP or TCP-DST job) would be carried out by the wireline / slickline services. Fishing tool with necessary crossover shall be provided without any extra cost to OIL.

9.6 COIL TUBING UNIT & PCTLF SERVICES ALONGWITH PUMPING UNIT

Contractor shall provide Coil Tubing Services & PCTLF services (for rig up of CTU) for following objectives, but not limited to:

- To provide for gas hydrates removal by Coil Tubing in case of contingency in exploratory wells.
- Activation in wells,
- well bore cleaning,
- Acid pumping (spotting and or fracturing)

- Filling of methanol/base oil/diesel,
- Drilling of cement,
- Clearing inside tubing obstruction
- Well killing
- Other operations as per OIL requirement

ITEM AND QUANTITIES REQUIRED FOR CTU & CTLF SERVICES:

The details of the required Coil Tubing, Pumping unit & CTLF suitable for 15,000 psi working pressure, sour service as per NACE MR-01-75 (Applicable Edition) are as under:

SN	Equipment	Unit	Quantity
1	Coil Tubing package	Set	1 no.
2	Pumping unit	Set	1 no.
3	PCTLF (Pivotal Coil tubing Lifting Frame)	Set	2 no.

Notes:

(i) Bidder shall provide all the equipment, CT tools, adapters, accessories and spares required to execute scope of work.

(ii) Any additional equipment tools, Cross-overs if required to complete intended scope of work to be indicated & provided to ensure smooth and continuous operation.

9.7 SLICKLINE SERVICES:

The details of Slickline Packages are as below

E.	SLICKLINE SERVICES (Package)		
SI. No.	ITEMS	UNIT	QTY
1.	Double Drum Slickline Unit	Set	1
2.	15K psi Slickline Lubricator	Set	1
3.	15K psi Stuffing Box	Each	1
4.	15K psi rated Slickline Double RAM Blow Out Preventer with Sinker Bar	Set	1
5.	Hydraulic Control Unit	no	1
6.	Tool Catcher	no	1
7.	Injection Sub	Set	1
8.	Slickline Clamps	Set	1
9.	Basic Tool Strings	Set	1

10.	Other tools (As defined in Scope)	Set	1
Items under Other Tools, Spares and Accessories			
11.	02 nos. of Bottom hole PVT samplers to be run in tandem, 1 no. of Transfer bench with 04 No. of Shipping bottles with all accessories for analysis of 9nos. of PVT samples.	Set	1
12.	08 nos. of Gas sampling cylinders for GC analysis (600 cc) and 03 nos. of Liquid sampling cylinder with 20Litre capacity for collection of surface reservoir fluid sample.	Set	1
13.	Liquid Level Well Analyzer	Set	1

Notes

1. The Bidder shall provide sufficient back up of TCP, DST, SSTT, SPT, NPU CTU, CTLF & Slickline equipment spares / consumables ('O' rings, elastomers / rubber seals, redressing kits etc.) in order to ensure uninterrupted services.
2. Any additional equipment or tools required to fulfil the scope of work but not covered in the above Table are also to be supplied by the Bidder at no extra cost.
3. The above list of tools / equipment / spares / consumables is indicative only and any other tools, equipment, spares and consumables are required, the Bidder shall arrange the same without any cost implication to company.

ANNEXURE – I

A. SPECIFICATION OF SOME OF THE MAJOR TOOLS AND EQUIPMENT:

A.1 General Design Considerations:

1. All flow-wetted equipment components shall be manufactured from materials that:

   (i) Comply with NACE standard MR0175 for sulphide stress cracking resistant metallic materials.

   (ii) Can tolerate brief exposure to formation treatment acids and inhibitors, neat methanol, solvents, etc.

2. Unless specified otherwise, all equipment upstream of the test choke shall be rated as a minimum:

   i) 15000 PSI working pressure
   ii) 350 Deg F working temperature.
   iii) Sour Service

3. Bidder shall provide crossovers as required to allow make-up of all downhole tools to 4.1/2" PH6 and 3.1/2" PH6 test tubing (connections as in the Drilling Tools section of this Bundled Services Scope of Work). The cost of these crossovers shall be included in the tool rental fees.

4. All tubular goods shall be manufactured in accordance with the latest revision of API Specification 5CT.

5. All equipment shall be equipped with closed-bottom skids with sides to provide spill control.

6. Necessary connections to the flare booms shall be on Bidder's scope. Flare Boom details shall be provided with the Bidder.

7. Bidder shall be required to provide sea-fastening and grounding materials. Sea fastening design needs to meet or exceed Company, Drilling Bidder and possibly DNV specifications.

8. Bidder shall comply with the certification of Production testing package as required by Drilling Rig / Rig Warranty Surveyor without any additional cost implication to the Company.

9. The Production testing package shall be strategically covered with F&G system. Necessary interfacing shall be made between ESD panel of SPT with Rig ESD system. Any compliance required in this regard, as advised by Rig Warranty Surveyor, shall be complied without any additional cost to the company.

10. All equipment that requires personnel to work at heights (surge tanks, etc.) shall be equipped with suitable / certified fall arrestor and harness.

11. All above equipment & tools must comply to Rig's Warranty Surveyor audit and should be replaced by the Bidder if not found suitable with no extra cost to Company.

1. Subsurface Test Tree (SSTT) Equipment & Accessories

1.1 Subsurface Test Tree (SSTT)

1) The SSTT should be suitable for operations in water depth more than 3000 meters and should have necessary hose length along with Emergency Release System required for its operation and control within the time specified below.
2) The SSTT assembly shall be complete with fluted hangers (with ports for fluid by-pass in landed condition) suitable for wear bushings of required size of wellheads, Ported type Slick joint to be compatible with rig BOP ram configuration and spacers, valve assembly, latch and un-latch assembly, centralizer, shear sub, hose reel with sufficient control line for water depth of 3000m, accumulator, control panel etc.
3) The SSTT should be suitable for Sour Service as per NACE Specifications MR-0175 (latest applicable edition).
4) The SSTT should have up to 30% HCl Acid resistance with suitable acid inhibitor.
5) The Nominal Size of SSTT should be minimum 3.00" (Min ID 2.86")
6) The Working and Test pressures of the SSTT should be 15,000 psi and 22,500 psi respectively.

7) The design temperature shall be -4^{o} F to minimum 350^{o} F.
8) The end connections of SSTT assembly (below fluted hanger) should be suitable for connecting 4.1/2" or 3.1/2" premium tubing/drill pipe as production string below and 4.1/2" or 3.1/2" premium landing string above. The Bidder has to pre-check the end connection of tubing/drill pipe and mobilize end connections accordingly.
9) The response time for operating SSTT in water depth up to 3000 meters shall be as follows:
   - Time to close ball valve - 15 seconds maximum.
   - Total time for complete closure of valves and unlatching of SSTT assembly - 20 seconds maximum.

   The offered system should be capable of multiple latch and unlatch without pulling out the SSTT. Bidder must specify actual response time and the maximum unlatch angle and normal recommended unlatch angle.
10) The SSTT should have either two ball valves or a combination of ball valve and a flapper valve. The valves should be surface controlled, normally closed and pressure to open, with fail-safe closure.
11) The design feature of the valves should be such that in an emergency it is possible to pump and kill the well through SSTT even when valves are closed or the hydraulic control of valves is ineffective.
12) The ball valve should be capable of cutting 1-1/4" to 1-3/4" coil tubing and 5/16" wireline cable.
13) Minimum yield strength should be 5,20,000 lbs at zero pressure and 255,000 at 15000 psi.
14) The SSTT should be able to be unlatched both hydraulically and mechanically under down-hole conditions.
15) The length of SSTT shall be sufficiently short to accommodate in standard BOP stack with two pipe rams closed below it and allow the shear rams to close above it (across a shear sub) even in the latched condition. Bidder must provide actual space-out diagram.
16) The SSTT shall be suitable for injection of chemicals such as glycol, Methanol, paraffin inhibitor, PPD, diesel etc. up to maximum pressure of 15,000 psi in between the two valves. Alternatively, injection provision can also be provided below Retainer valve and below mud line. Necessary hose, fittings and pumping unit for discharge of 1 GPM at 12,500 psi are to be provided. Hose & fittings for chemical

injections should have sufficient burst & collapse capacity to withstand in well without chemical injection in case of no flow or poor influx condition in well.

17) The hydraulic control hoses shall be suitable to withstand hydrostatic pressure of the mud column in the riser and complete with suitable riser sealing mandrill(s) to prevent damage while using in long riser in order to protect the control hoses as well as to prevent leakage of hydrocarbon into the long risers.
18) In addition to the complete set of equipment as specified in the scope of work, following SSTT Back up tools are to be provided by the Bidder:

- Subsea Test Tree along with slotted type fluted hangers compatible with rig BOP wear bushings,
- Slick joints, spacers (if required),
- Valve assembly,
- Latch unlatch assembly and
- Centralizers etc. and
- Any other equipment required for the operation

19) The Bidder shall have testing facility in India to test the entire SSTT under vertical and horizontal conditions for all functionalities including the unlatch.

1.2 RETAINER VALVE:

1) The unit should be suitable for operations in water depth up to 3000 meters
2) The unit should be suitable for Sour Service as per NACE specifications MR-0175 (latest edition).
3) The unit should have up to 30% HCl Acid resistance with suitable acid inhibitor.
4) The Nominal Size of SSTT should be 3.00" with minimum ID 2.86"
5) The working and test pressures should be 15,000 psi and 22,5000 psi respectively.
6) The design temperature shall be +4 Deg F to minimum 350 Deg F.
7) The bottom of retainer valve should be connected to shear sub and top should be connected to landing string, using suitable cross-overs, if required.

8) The Retainer valve should be surface controlled. The design feature of the valve should be such that in an emergency it is possible to pump, kill and circulate through the retainer valve, even when the hydraulic control lines of the Retainer ball valve is ineffective.
9) In the event the SSTT has to be unlatched or if the landing string has to be pulled out after shearing from the shear sub, the Retainer valve should be in closed condition. Also, it should be possible to pressure test the landing string from the surface to the retainer valve up to 15,000 psi. Retainer valve can be either 'fail-as-is' or 'fail safe with pump through' capability.
10) Minimum yield strength should be 5,20,000 lbs at zero pressure.

1.3 LUBRICATOR VALVE

1) The unit should be suitable for Sour Service as per NACE specifications MR-0175 (latest edition).
2) The unit should have 30 % HCl Acid resistance with suitable acid inhibitor.
3) The Nominal size should be 3.00" with minimum ID 2.86"
4) The working and test pressure should be 15,000 and 22,500 psi respectively.
5) The design temperature shall be +4 Deg F to minimum 350 Deg F.
6) The end connections should be suitable for connecting with landing string using suitable crossovers, if required.
7) The ball valve shall be surface controlled, opened and closed by surface pressure. The design should be such that the valve opens or closes when pressurized and remains in the same position when pressure is bled off.
8) The design feature of the valve should be such that in an emergency it is possible to pump, kill and circulate through the lubricator valve, even when the ball valve is closed, and hydraulic control of the ball valve is ineffective. Also, it should be possible to pressure test the string from surface up to lubricator valve at 15,000 psi.
9) The minimum hose length should be as per operational requirement.
10) Minimum yield strength should be 5,20,000 lbs at zero pressure.

1.4 PUMP OUT SUB:

Pump out sub should be suitable for use during space-out (Below pipe rams) of the landing string to avoid any upward movement of the string due to pressure in the annulus and act as a stopper for any upward movement of the string.

1.5 CROSS-OVERS

1) All crossovers should be suitable for sour service as per NACE Spec MR-0175 (latest edition).
2) All crossovers should have Acid resistance up to 30 % HCl with suitable acid inhibitor.
3) The minimum ID should be compatible with the Tubing string and as per the API recognized standards.
4) The minimum ID shall be maximum available as per API standards for tubing to IF and IF to IF cross-overs.
5) The working and test pressure should be as per API-5CT standards
6) The minimum length should be 18 inches.
7) The minimum yield strength of tubing to tubing and tubing to IF cross-overs shall be maximum available as per API standards/ specifications of Premium tubing's.
8) The minimum yield strength of IF to IF cross-overs shall be as per API standards.

1.6 SUBSEA TEST TREE SYSTEM CONTROL

1) Company preference is for a multiplexed (MUX) electro-hydraulic SSTT control system.
2) Bidder shall provide data estimating the time required to effect a full disconnect, and the associated assumptions for umbilical length, etc., with all tendered systems.
3) Subsea Test Tree Controls shall:

a) Be equipped with HPU and panel.
b) Be supplied with filtered control line fluid, to be supplied and maintained by Bidder.
c) Have sufficient hydraulic accumulation to perform a full disconnect without having to wait on the HPU.
d) Have sufficient surface functions and umbilical cores to control the subsea test tree functions independently, to provide at least one (1) chemical injection lines and have at least one (1) spare cores.
e) Have sufficient jumper hose to allow the HPU to be rigged up 100 ft from the reeler.
f) All fittings shall be high-integrity fittings such as JIC and Autoclave. NPT fittings shall not be used on downhole or high-pressure lines.
g) Be equipped with at least three (3) Emergency Shut Down (ESD) Stations, to close the test tree valve(s) but NOT to initiate SSTT disconnect.

4) Bidder shall supply an SSTT umbilical that conforms to the following:
a) Be equipped with at least 1.25x the water depth of umbilical on the spooler.
b) Splices are not permitted on any lines that pass below the rotary table.
c) Reels shall be equipped with air-driven motors and auto-winders.
d) Reels shall be equipped with isolation valves and manifolds.
e) As a minimum, reel shall have a hydraulic slip ring to maintain pressure on the SSTT 'latch' circuit at all times and/or two (2) block valves with pressure gauge to maintain and monitor pressure while the reel is in operation. Hydraulic slip rings on all functions are preferred.
f) Umbilical shall have at least one line dedicated to chemical injection at the SSTT. These should be at least 3/8" or ¼" ID. Bidder shall supply a field repair kit that allows for a full re-splice of the umbilical. If sold to Company and not used, this shall be sold back to Bidder at cost at the end of the Work.

Notes:
i) There will not be any chemical injection mandrel below mud line.
ii) Bidder shall provide two air-driven chemical pump(s) capable of pumping oil-based fluids, of a similar design to the SSTT methanol pumps.

5) Bidder shall provide all sheaves and ancillary handling equipment as part of the base SSTT package.

6) Bidder shall provide non-metallic device such as high-strength "Polyken"-type tape and tie-wraps to secure the umbilical(s) to the test tubing.

1.7 CHEMICAL INJECTION

1) High pressure chemical lines shall be equipped with JIC, Autoclave or similar high-integrity connection with metal-to-metal seal. NPT and BSP-type connections shall not be used without written Company approval.

2) All chemical pumps shall be certified for use in Zone 1 areas.

3) All chemical pumps shall be equipped with a suitable relief valve system.

4) Bidder shall provide two air-driven chemical pump(s) capable of pumping methanol to the SSTT at a minimum 1 gallon per minute (GPM) at 10000 PSI SSTT pressure, and ½ GPM at 15,000 PSI SSTT pressure.

5) Bidder shall supply three ea 500 gal closed-top tote tanks for methanol transport and use offshore. A drum is not acceptable. The totes shall comply with Company lifting specifications and shall be equipped with bunding capable of containing the full tote volume.

6) Bidder shall supply four (4) chemical injection pumps and spools for surface chemical injection. Pumps shall be air driven and capable of rates between 0.1 and 1.0 gallons per minute. Possible services include methanol, de-foamer, wax inhibitors, etc. Injection points may be upstream or downstream of the choke.

7) Bidder shall either supply certified tote tanks, for methanol and glycol or a drum carrier for the surface treatment chemicals.

8) Bidder may be required to supply a chemical injection system, to provide oil-based chemicals (wax inhibitors, etc.) to the landing string at or above the SSTT / Retainer Valve. This shall consist of the following:

   a) Either a dedicated port in the SSTT (in addition to the methanol port), or 2 ea (primary and back-up) chemical injection mandrel, c/w dual-check chemical injection valve.
   b) 1 ea two hose umbilical, 3/8" or ¼" minimum ID, c/w reel and sheave.
   c) ea (primary and back-up) two air-driven chemical pump(s) capable of pumping oil-based fluids, of a similar design to the SSTT methanol pumps above.

2. SURFACE PRODUCTION TESTING (SPT) SERVICES

The Flow head, choke manifold and its upstream of all data headers and pressure bleed off points shall each be equipped with double block and bleed needle valves with minimum 15000 psi WP pressure rating. The details of the required Surface Production Testing (SPT) Equipment and accessories to be deployed by the Bidder are enumerated as under:

2.1 (a) SURFACE FLOW HEAD / CONTROL HEAD / SURFACE TREE

Surface flow head should have heavy duty swivel and hydraulic actuator. The item should have the following specifications:

a) Solid block integral unitized body.
b) Minimum bore 2.86"
c) Working pressure 15000 psi.
d) Test pressure 22500 psi.
e) Temperature range: -20 Deg F to 320 Deg F
f) Complete unit should be suitable for Sour Service as per NACE Spec MR-0175 (latest applicable edition)
g) Consisting of 04 nos. of 3.1/6" gate valve (1 no. master valve, 1 no. swab valve and 2 nos. wing valves with one hydraulic actuator for flow line valve).
h) Acid resistance up to 30 % HCl with suitable acid inhibitor.
i) Tensile strength 600,000 lbs at zero pressure.
j) Complete with lifting sub of suitable length with handling equipment as required.
k) Wing end connections should be 3", 15O2, rated to 15000 Psi

l) Downstream flow head should be provided with one no. of wing valve hydraulically controlled and actuated with remote control system including pump and hydraulic hose etc. Functioning of the valve should be pressured to open.

m) Suitable crossovers should be provided for connecting flow head bottom with Test string, lifting sub top with wire line BOP/ stuffing box and wing end connections rated to 15 K. All the crossovers should have specifications as per SOW.

2.1 (b) STIFF JOINT:

Minimum 2 nos. of stiff joints shall be provided to suit a minimum total length of 6 mtrs. Additional 2 nos of stiff joints shall be provided to suit a minimum total length of 6 mtrs, as back up for each set.

a) Minimum Bore - 2.86”
b) Working Pressure - 15,000 psi
c) Test Pressure - 22,500 psi
d) Temperature range - -20 Deg F to 320 Deg F
e) Should be suitable for sour service as per NACE specs MR-01-75 (applicable edition)
f) Should be acid resistant upto 30 % HCl with suitable acid inhibitor
g) Should have a tensile strength of 600,000 lbs at 0 pressure
h) The stiff joint should be supplied with suitable X-overs so as to connect the flow head above and to the landing string below.

2.2 CHOKE MANIFOLD AND ACCESSORIES

2.2.1 CHOKE MANIFOLD

a) Size 3” dual choke manifold with both positive and adjustable choke.
b) Working pressure 15,000 psi.
c) Test pressure 22500 psi.
d) Working temp. -20 Deg F to 320 Deg F
e) Suitable for sour service as per NACE specs MR 0175 (Latest Edition).
f) Inlet and outlet connections should be 3”, 1502, rated to 15000 psi
g) Choke Manifold should have 2 upstream, 2 downstream 3.1/16” Gate valves with hand wheels.
h) All the valves should be rated for same working pressure and temp as specified above.

i) Positive choke (Tungsten Carbide or Ceramic Lining) from 1/8" to 1½" with incremental of 1/32".
j) Manually adjustable choke on other side from 1/8" to 1.1/2".
k) Should have suitable ports for measuring pressure, temperature and ports for chemical injection and fluid sampling.

2.2.2 ESSENTIAL ACCESSORIES FOR ONE CHOKE MANIFOLD

a) 01 Set of positive chokes (tungsten carbide or ceramic lined) from 1/8" to 1½" in with increment of 1/16" up to 1" and with increment of 1/8" up to 1½".
b) Pressure gauge with ½" /Autoclave Connection
    i. 0-15000 psi - 3 nos.
    ii. 0-10000 psi - 3 nos.
    iii. 0-5000 psi - 3 nos.
    iv. 0-1000 psi - 3 nos.
    v. 0-500 psi - 3 nos.
    vi. 0-100 psi - 3 nos.
c) 4" dial type bi-metallic thermometer/strap-on thermo-transducer (temperature gauge) for each set of PTS. 0 to 320 deg F – 3 Nos.
d) Choke bean wrench - 1 no.
e) Hand wheel for valves - 2 nos.
f) Steel braided rubber tube with connection ½" Autoclave size 10' long suitable for 15,000 psi for sampling purpose - 1 no.

2.2.3 DATA / INJECTION HEADER

a) End connections 3", 1502 rated up to 15K psi
b) Working pressure 15000 psi and test pressure 22500 psi
c) Working temp. -20 Deg F to 320 Deg F
d) Suitable for Sour service as per NACE Specification MR-0175 (Latest Edition).
e) Minimum 5 nos. of NPT ports for pressure and temp recording and chemical injection.
f) Sufficient no. of Autoclave type needle valves (15000 psi WP) and ½" thermowells or strap-on thermo-transducers.

2.3 3" FLEXIBLE (COFLEXIP HOSE) – 2 Nos.

a) It should be of single length with minimum 45 feet, suitable for connecting flow head with standpipe.
b) Suitable for sour service as per NACE Specification MR-0175 (latest Edition).
c) Working pressure 15000 psi and test pressure 22500 psi
d) Working temp. -20 Deg F to 266 Deg F
e) Inlet and outlet connection should be 3"1502 rated up to 15000 psi WP

Note: To make up the connection, if required, more than 2 nos. of 3" Coflexip hose may be required, and bidder shall supply the same without any additional cost to the company.

2.4 STEAM HEAT EXCHANGER WITH STEAM GENERATOR – 1 No.

a) Unit should be Skid mounted, suitable for offshore transportation.
b) Unit should be suitable for sour service as per NACE Specification MR-0175 (latest Edition)
c) Working temperature – 0 Deg F to + 350 Deg F
d) Working pressure: 15000 psi
e) Minimum heat capacity: 4.3 MM BTU/hr
f) Unit should be complete with bypass manifold for bypassing exchanger.
g) Inlet and outlets are to be fitted with 3", 15O2 WECO hammer union.
h) Unit should be complete with adjustable/Fixed choke system.
i) The unit should have suitable temperature sockets with thermometers fitted to indicate actual temperature of fluid at inlet & outlet.
j) Steam generator with following specification:
    i. Steam output of 2000 KG/hr or 4.5 MMBTU
    ii. Working pressure – 150 psi
    iii. Fuel Tank capacity of 1500 litres
    iv. Steam Generator shall be Zone 2 compliant.

2.5 THREE PHASE HORIZONTAL TEST SEPARATOR

a) Nominal WP: 1440 psi
b) Test pressure: 2150 psi

c) Working temperature range: 32 Deg.F to 212 Deg.F
d) Inlet and outlet connection 3'' 6000 psi.
e) Sour service as per NACE Specification MR-0175 (latest Edition)
f) Liquid rate 100 to 10,000 BPD
g) Gas rate: 60 MM SCF/Day
h) Water rate: 100 to 2000 BPD
i) Retention time = 1 Min
j) Fitted with two safety relief valves.
k) Should be fitted with shrinkage tester
l) Complete with Barton flow recorder range 0-400" differential pressure of water or electronic differential pressure measurement device
m) The gas outlet should have a Daniel orifice fitting with a full set of orifice plates or Coriolis gas meter.
n) Oil and water outlet should have turbine or Coriolis meters with accuracy of 5% for oil meter and 10% for water meter.
o) Unit should be as per API Spec 12-J / ASME Section VIII.Div. 1
p) The unit should have facility for oil, gas & water sampling.

2.6 SURGE TANK

a) Working Pressure: 150 psi.
b) Shall have 2 single / 1 dual compartments with total capacity of 100 bbls, minimum. Must have the provision to divert the flow through either of the compartments without disturbing the flow from the well, through a suitable manifold.
c) Sour service as per NACE Specification MR-0175 (latest Edition).
d) Shall have high and low alarm for liquid level.
e) Complete with level gauge and bypass manifold.
f) It should be equipped with Pressure Safety Valve (PSV) in each compartment for protection from overpressure.

2.7 TRANSFER PUMP

a) Driven by flame proof electric motor.
b) Delivery rate 2,000 BOPD.

c) Should be hooked up in the manifold of surge tank for direct suction and delivery to Burner.
d) Should have non-return check valve fitted either in the Pump or Pump manifold to prevent any back flow.

2.8 PIPING PACKAGE

a) 3", Fig 15O2 Straight Pipes and Elbows for connecting Flow head to Choke manifold with a temperature rating in the range of -20 Deg. F to 320 Deg. F.
b) 3", Fig 15O2 Straight Pipes and Elbows for connecting choke manifold to heat exchanger with a temperature rating.
c) 3", Fig 206 Straight Pipes and Elbows for connecting all liquid lines downstream of the separator.
d) 4", Fig 206 Straight Pipes and Elbows for connecting all gas lines downstream of the separator.
e) Changeovers for end connections, wherever necessary, provided in sufficient quantity.
f) All the above piping packages should be suitable for sour service as per NACE MR-0175 (latest Edition) and should have Acid resistance up 30 % HCl with suitable acid inhibitor.
g) Piping should have provision for methanol injections to avoid hydrate formation.

Note: The upstream lines connecting the flow head to the choke manifold should be in sufficient length to facilitate the string to be picked up by about 40' for stabbing out of the packer, without disconnecting the flowline. Also, the downstream lines should be in sufficient quantity for completing the surface hook-up from choke manifold to the Burner Booms.

2.9 CHEMICAL INJECTION PUMP

a) Pump should be pneumatically driven, positive displacement.
b) Fluid discharge capacity = 85 GPD (minimum) at 15,000 psi.
c) Working Pressure 15,000 psi
d) Provided with sufficient length of high-pressure hose (15,000 psi WP) with 1/2" Autoclave connectors.
e) Pump to be provided with check valve.

f) All chemical pumps shall be certified for use in Zone 1 areas.
g) All chemical pumps should be equipped with a suitable relief valve system.
h) Bidder shall supply one (1) chemical injection pump with common manifold and spools for surface chemical injections. Pumps shall be air driven and capable of rates between 0.1 and 1.0 gallons per minute. Possible services include methanol, de-foamer, wax inhibitors, etc. Injection points may be upstream or downstream of the choke.
i) High pressure chemical lines shall be equipped with JIC, Autoclave or similar high-integrity connection with metal-to-metal seal. NPT and BSP-type connections shall not be used without written Company approval.
j) Bidders shall either supply certified tote tanks, for methanol and glycol or a drum carrier for the surface treatment chemicals.
k) All necessary chemicals like Methanol/ Glycol for hydrate control, Pour Point Depressant (PPD), Defoamer, Demulsifier shall be made available as needed. Payment shall be made for consumable items (Methanol, PPD, Demulsifier, Defoamer and Liquid Nitrogen) against mobilized quantity as per the mobilisation notice issued by company. Mobilization notice for consumables shall be issued with a mobilization period of 14 days.

2.10 SURFACE PRESSURE & TEMPERATURE RECORDER

a) Pressure rating 0-15000 psi and temperature rating 320 Deg F.
b) Recorders should have only mechanical input and operation with provision for hook up to data acquisition computers to record of surface pressure, temperature, flow rate etc.
c) Suitable for sour service as per NACE Specification MR-0175 (latest Edition).
d) Pressure to be tapped from 1/2" Autoclave needle valve box.
e) Temperature to be measured from 1/2" Autoclave weld neck pocket or strap-on thermos-transducer.
f) Chart drive mechanical, one revolution in 24 hrs.
g) Should be able to be positioned on upstream of Choke Manifold.
h) Should have proven reliability and repeatability across the entire operating range.

2.11 DEAD WEIGHT TESTER

a) Mainly required for accurate measurement of pressure in the pipelines
b) Material & fabrication as per NACE specs. MR-01-75 (applicable edition).
c) Pressure range 50-15000 psi.
d) Pressure intervals 1 psi.

2.12 ESD PANEL FOR SHUT DOWN

a) Each set should have 3 nos. of high-low pilots
b) One no. high-low pilot each between
    a. Flow head & Choke manifold
    b. Choke Manifold & Heater
    c. Heater & Separator
c) To control hydraulic valve on the flow head and the surface safety valve for pressure rating of 15000 psi.
d) Should be suitable for sour service as per NACE specs MR-01-75 (applicable edition).
e) Suitable number of pneumatic controls (min. 5) to be linked to ESD systems for rig wide access to ESD systems. Necessary interfacing shall be carried out between ESD Panel of SPT to Rig ESD system. Any compliance in this regard as advised by Rig Warranty Surveyor shall be complied without any cost implication to company.
f) This system should be a “fail-safe” system in order that any loss of instrument air or hydraulic power to the system will cause the well to be safely shut down.
g) All hoses & connectors for pneumatic or hydraulic control of valves, sensors, connections for input sensors should be supplied by the Bidder with assured compatibility.

2.13 OIL MANIFOLD

a) Sour service as per NACE Specification MR-0175 (latest Edition)
b) WP 1440 psi.
c) Should have 3" ball/plug valves.
d) Should have 3" WECO Hammer union inlet/outlet connections.
e) Should be able to divert oil flow to burner or other surface equipment as required.

2.14 GAS MANIFOLD

a) Sour service as per NACE Specification MR-0175 (latest edition)
b) WP 1440 Psi.
c) Should have 4" ball/plug valves.
d) Should have 4" WECO Hammer union inlet/outlet connection.
e) Should be able to divert wellbore fluids flow to burner or other surface equipment as required.

2.15 LAB CABIN

Should have lab equipment like gas gravitometer, centrifuges, H_2S detection pump etc.

2.16 AIR COMPRESSOR – 2 Nos.

a) Should be able to supply sufficient quantity of air (600-700 scft at 100 psi) to burner for complete combustion of well effluents.
b) Rugged enough for offshore use.
c) Electrical/diesel powered, flame proof.
d) Provided with flexible hose and suitable end connection to connect with air line of burner.
e) The air line from compressor to burner should be fitted with a non-return check valve, to avoid any hydrocarbon mixture form burner.
f) Air compressor shall be Zone 2 compliant.

2.17 SAND FILTER

a) Suitable for removing sand from crude oil and / or gas flow.
b) Sour service as per NACE Specification MR-0175 (latest applicable edition).
c) Working Pressure 15,000 psi & temperature up to 320 deg F.
d) Should have double isolated accumulation vessel for continuous operation with filter size of 100 microns and 200 microns.
e) Sand hold up volume at least 75 lts.
f) Inlet/outlet connection 3" 15O2 connection.
g) Interconnecting piping with by-pass and drain.
h) Clamp on type electronic sand detection system, which needs to be clamped on upstream elbow.

i) Should be rugged for use in high-rate multiphase flow and high temperature environments.

2.18 SURFACE SAFETY VALVE

a) Line Size 3" to be rigged up between flow head and choke manifold.
b) Working pressure 15,000 psi.
c) Test pressure 22500 psi.
d) Working temp. -20 Deg F to 320 Deg F
e) Suitable for sour service as per NACE Specification MR 01-75 (Latest Edition).
f) Inlet and outlet to be 3" 1502 rated to 15000 psi WP
g) Gate valve, hydraulically operated and fail-safe configuration – to close in case of hydraulics line failure.
h) Remote shut in with the help of ESD control panel.
i) Should be able to prevent any overpressure to downstream equipment by shutting-in the well immediately upon failure or leaks in any downstream equipment.
j) In case of emergency, should be able to close before SSSV valve gets closed, to reduce/prevent any damage to SSSV.

2.19 WELL TEST WORKSHOP CONTAINER WITH ACCESSORIES:

Workshop containers should include following minimum items

a) Pressure gauges, ranges to include at minimum 0-15000 psi, 0-10000 psi, 0-5000 psi, 0-2000 psi, 0-200 psi
b) Thermometers
c) Gas gravitometer
d) Centrifuge (manual)
e) Hydrometer set
f) Dead weight tester
g) Gas sniffers
h) Portable H2S (range 10 ppm) and CO2 detection equipment
i) Tests on Oil / Gas samples should include:
    a. Density / Specific gravity / Deg API
    b. pH

c. Measurement of the Hydrogen Sulphide (H2S) Carbon Dioxide (CO2) by Draeger tubes.
d. Pour point
e. BS&W
f. GC up to at least C6+

j) Fittings and needle valves required for the operation.
k) All tools required and necessary spares required for PTS operation.
l) Equipment to collect well fluid at surface for PVT analysis.

2.20 SURFACE TESTING ACQUISITION NETWORK: 01 No.

a) Means of recording and displaying following minimum parameters
   i. Wellhead Pressure
   ii. Wellhead Temperature
   iii. Annulus Pressure
   iv. Separator Pressure
   v. Upstream & Downstream choke pressure
   vi. Separator temperature
   vii. Separator gas temperature
   viii. Separator liquid temperature
   ix. Separator gas differential pressure
b) Capability of producing real time plots of Pressure vs. Time and of Flow rate vs. Time.
c) Acquisition Computer
d) All the required sensors for collecting the data should be provided by the Bidder, including all required cabling.
e) All sensors and metering devices should have valid calibration certificates.
f) All the data acquired should be transmitted to Zone 2 data acquisition cabin at offshore and will be monitored by test engineer at offshore from same place. Recorded data to be handed over to OIL.

2.21 Real Time Data Transmission

Real Time Data Transmission should have the Software package to properly store, organize and display all the data collected during the well test program in industry standard formats

(WITSML) for transmission by RTOC Service Provider using Rig V-SAT connection so that the same can be downloaded or viewed online in real time at base.

Bidder is responsible for providing transmittable data to Company. Data is to be transmitted through V-SAT connection to the base.

2.22 Sample Bottles

a) Conventional Gas Samplers, 1500 psi, 600 cc, IATA confirming, Qty. 8
b) Dead oil sample cans, 1 LITER, IATA conforming, qty. 20
c) Dead oil sample cans, 5 LITER, IATA conforming, qty. 5
d) Dead oil sample cans, 10 LITER, IATA conforming, qty. 5
e) Water sample bottles, 1 LITER, plastic or glass, qty. 20
f) Labels and consumables for all the above

2.23 Safety equipment

a) Fire extinguishers
b) Portable H_2S (Level-10 ppm and beyond) and CO2 detection / measurement equipment
c) Portable explosimeter
d) Personnel protective equipment

2.24 Tools, Cross-overs & Spares

a) Containerized workshop / store with power and lighting
b) Includes all hand tools, all types of cross-overs, spare parts etc. required for surface testing operations
c) Hose baskets, pipe racks and baskets etc.

2.25 Fittings and needle valves

Needle valves and fittings to supply for all pressure, temperature and sampling point upstream of the heater with double block and bleed.

2.26 Consumable Items

(i) Chemicals:

- Methanol/ Glycol for hydrate control
- Pour Point Depressant (PPD)
- Defoamer
- Demulsifier

(ii) Fuels: Propane / LPG for Pilot Burner (Std. Industrial Cylinder)

(iii) Sand Screens

Bidder shall provide sand screens on consignment basis. Sand Screen shall have the following specifications:-

a) 3.1/2", P110, 12.7 ppf, 125 micron Sand screen, minimum 15 ft long for standard services with cross over and blind bottom.
b) 2.7/8", P110, 7.9 ppf, 125 micron Sand screen, minimum 15 ft long for (4.1/2" Liner) standard services with cross over and blind bottom
c) 125 micron metal mesh premium Sand screen which consists of base pipe, outer shroud / cage to protect and minimize erosion and three layers inclusive of one drainage layer.
d) The metallic porous filter membrane (media) shall be such that 90% of the indicated D50 sand particles shall be retained by the sand screen.
e) The metallic porous filter membrane (medial) shall also be of such a design that the filter cake (of water based mud / SOBM) can be removed by simple back wash.
f) Base pipe: 3-1/2", P-110, 12.7 ppf and minimum 15 ft long. Minimum tensile strength of 1,55,000 lb.
g) Base pipe: 2.7/8", P110, 7.9 ppf, 125 micron Sand screen, minimum 15 ft long for (4.1/2" Liner) Minimum tensile strength of 1,55,000 lb.
h) End connection cross over: Top cross over 2-7/8" API EUE Box UP x 3-1/2" connection (screen) and Bottom cross over 3-1/2" connection (screen) x 2-7/8" API EUE Pin Down for each screen.
i) 2-7/8" EUE Box connection with blind bottom for each sand screen.

j) The outer shroud support shall support and protect the complete screen during running in form well bore fragments.
k) The inner support jacket/mesh/shroud shall support and protect the metallic porous filter membrane.
l) The screens shall have provision for secondary formation control and to minimize erosion/redirect flow.
m) The screen should have 125 micron mesh and minimum effective screen length shall be 13 ft.
n) The sand screen should have minimum 1 ft. blank pipe on both the top and bottom for putting slips and power tong for make-up/break-up.
o) The maximum O.D of the screen shall be 4.52" for 3.1/2" Sand screen & 3.5" for 2.7/8" Sand Screen.
p) The minimum in-flow area of the screens shall not be less than 30% of the total area.
q) The metallic porous filter membrane (media), intermediate screens/jacket and outer shroud shall be made of SS 316L/SS316/SS304.
r) The screens shall have a base pipe having minimum collapse pressure of 6000 psi.
s) Blade type centralizer of 3" long with shoulder shall be welded on pin end of the base pipe and suitable for 7", 32 PPF casing.

Notes: The Bidder shall also quote for any additional item which is not listed above but is essential for operation and their rates shall be included within the line items mentioned in Schedule of rates.

3. EQUIPMENT & ACCESSORIES

3.1 CROSS-OVERS

1) All crossovers should be suitable for sour service as per NACE Spec MR-0175 (latest edition).
2) All crossovers should have Acid resistance with suitable acid inhibitor.
3) The minimum ID should be compatible with the Tubing string and as per the API recognized standards
4) The working and test pressure should be as per API-5CT standards
5) The minimum length should be 18 inches.

4. WELL ACTIVATION SERVICE

The job will involve unloading and activation of newly drilled wells using Nitrogen Pumping Unit (NPU) with or without Coiled Tubing Unit. It involves displace the well fluid with nitrogen to the desired volume/ depth and make the well displace on its own. The job will also be applicable for unloading and lowering of fluid levels of wells prior to perforations. The services of NPU shall be mobilized together or alone as per the job requirements.

4.1 NITROGEN PUMPING UNIT (NPU)

The Bidder shall provide Nitrogen pumping Unit (NPU), skid mounted, capable of pumping and vaporizing 180000 / 90000 (MAX) along with a minimum storage tank of capacity 2000 US gallons liquid nitrogen tank. The Bidder should provide all the necessary surface connections/fittings for smooth and successful operation of the job. The unit shall have nitrogen pumping vaporizing system capable of pumping up to 180000 / 90000 SCFH of gaseous nitrogen and pressure up to 15000 psi.

The Bidder shall provide any other equipment / tools/ spares required for successful well activation service, but not mentioned above.

Payment shall be made for Liquid Nitrogen against mobilized quantity. Mobilization notice for liquid nitrogen shall be issued with a mobilization period of 14 days.

5. DRILL STEM TESTING SERVICE

Cased Hole DST Service for 9.5/8" or 9.7/8" casing, 7" & 4.1/2" Casing / Liner

The tools should have the following specifications:

a) Maximum OD: 5.5" for 9.5/8" or 9.7/8" & 7" Casings / Liner, 3.80" for 4.1/2" Liner
b) Minimum ID: 2.25"
c) Minimum tensile strength: 110 K lbs
d) Maximum differential pressure: 15,000 psi
e) Maximum temperature rating: 350 ˚F

5.1.1 Single Shot Circulating Valve

a) Annulus pressure activated rupture disc by applying predetermined annulus pressure.
b) The flow ports shall have sufficient area and resistance to erosion to permit circulation at an efficient rate with a pressure that does not cause operation of other tools.

5.1.2 Downhole Safety Valve With pump through

a) The full opening downhole safety valve should be run in open position and should be able to close permanently with a flapper/ball valve once rupture disc is activated by applying pressure in the annulus.
b) Once the valve is closed, there should be provision to pump through this valve from the top to allow well kill operations through the tubing / annulus.
c) Can be of either ball or flapper type.

5.1.3 Annulus / Tubing pressure operated, multi-cycle circulating valve.

a) The multi-cycle circulating valve is a re-closable valve operated by tubing pressure and is used to spot fluids and nitrogen.
b) The tool should be able to be run in lock open position during run-in-hole.
c) Once tool is at depth, the tool should be activated by differential pressure between tubing and annulus.
d) The tool should be able to operate by a pre-set number of pressure cycles in the tubing / annulus.
e) Able to accommodate forward circulating and reverse circulating operations.
f) The flow ports shall have sufficient area and resistance to erosion to permit circulation at an efficient rate with a pressure that does not interfere with the operation of other tools.

5.1.4 Pressure control tester valve with hold open assembly

a) The pressure control tester valve should be operated by annulus pressure.
b) It is the primary downhole valve used to control downhole formation flows and shut-ins.

c) The tool should have a hold-open module to allow run in hole either in open or ball valve in closed.

5.1.5 Pipe tester valve with auto fill flapper

a) This tool should be used for pressure testing the DST string above the valve while running in hole.
b) The tool should have a flapper valve run normally closed and should open permanently on application of annulus pressure to rupture the disc.
c) While running in hole, the flapper valve should allow automatic filling up of cushion from below or it shall be possible to open the tester valve with a pressure differential of 50% of working pressure from below.
d) Should be annulus pressure operated to lock fully open upon completion of pressure testing

5.1.6 Gauge Carrier

a) Gauge carrier shall be internally concentric
b) Externally mounted gauge housing
c) Gauges shall be installed in the carrier while on deck and pressure integrity tested. It must be possible to connect the gauge carrier to the string without breaking tested seals
d) Outside of carriers shall not have any sharp edges that can get hung up
e) To be run between packer and tester valve.
f) Shall be able to carry up to four (4) gauges
g) Three gauges to sense tubing pressure and one gauge to sense annulus pressure.

5.1.7 Quartz Gauge with battery

Minimum requirements are as follows:

a) Accuracy ± 5 psi and ± 1 °C
b) Resolution 0.01 psi and 0.01 °C
c) Pressure range 0 – 15000 psi minimum
d) Temperature range including battery pack 0 – 180 deg C
e) Scanning rate 0.1 sec to 10 minutes

f) Quartz type
g) Temperature rating inc battery pack, 150°C
h) 100,000 datasets minimum capacity
i) Calibration certificate not older than 1 year.

5.1.8 Radioactive Marker Sub

a) Should have high visibility on gamma ray log compared to natural gamma ray response from the formation.

5.1.9 4 1/2" Retrievable Packer

The packer used shall comply with the following:

a) The packer shall be capable of holding pressure differential 15000 psi from above as well below and temperature rating: 350 ˚F.
b) Packer setting should non-rotation type, straight pickup & release type considering depth of the well. Packer should be able to hang the TCP guns below and compatible with TCP perforation operation.
c) Shall have Hydraulic hold down.
d) Shall be suitable for 4-1/2" casing.
e) Compatible with TCP gun operation
f) Able to support tailpipe and TCP gun weight.

5.1.10 7" Retrievable Packer

The packer used shall comply with the following:

a) The packer shall be capable of holding pressure differential 15000 psi from above as well below and temperature rating: 350 ˚F
b) Packer setting should non-rotation type, straight pickup & release type considering depth of the well. Packer should be able to hang the TCP guns below and compatible with TCP perforation operation.
c) Shall have Hydraulic hold down.
d) Shall be suitable for 7" casing.
e) Compatible with TCP gun operation
f) Able to support tailpipe and TCP gun weight.

5.1.11 9.5/8" or 9.7/8" Retrievable Packer

The packer used shall comply with the following:

a) The packer shall be capable of holding pressure differential 12000 psi from above as well below and temperature rating: 350 ˚F
b) Packer setting should non-rotation type, straight pickup & release type considering depth of the well. Packer should be able to hang the TCP guns below and compatible with TCP perforation operation.
c) Shall have Hydraulic hold down.
d) Shall be suitable for 9.5/8" or 9.7/8" casing.
e) Compatible with TCP gun operation
f) Able to support tailpipe and TCP gun weight.

5.1.12 Surface Read Out (SRO)

a) Read the quartz gauges data at surface while recording downhole using Wireless connection to gauges down hole for on-line pressure & temperature data transmission to surface.
b) Read the quartz gauges data at surface while recording downhole using Wireline LINK system consisting of Down-hole Coupler Assembly, Wire-line Adapter & Running Tool Latch for down-hole latching with down-hole Quartz gauges for on-line pressure & temperature data transmission to surface.

5.1.13 Inline bottom-hole sample chamber

a) Inline **bottom-hole sample chamber** (15,000 PSI & 400°F) should be complete with all necessary equipment and accessories to assist in downhole sampling.
b) Annulus operated tool for collecting bottom hole samples from the tubing, either during flow or shut-in conditions.
c) Min 8 chambers with 300 cc capacity in each / 4 samplers of 600 cc each
d) Single Phase Sample Bottles -16 nos. for transfer of samples from samplers to single phase sample bottles

5.1.14 Tools and Parts

a) Containerized workshop/store with power and lighting
b) Includes all hand tools, spare parts, test subs, test pump, elastomers for DST tools, handling subs, crossovers etc. required for DST operations.
c) Tool racks

5.1.15 Subs and Cross Overs

The Bidder shall mobilize all subs (Lift, Quick Test etc.,) & cross overs required for running in operation. The bidder shall also provide requisite nos. (minimum 02 sets each) of Lifting Subs and quick test subs depending upon running in of DST/tubing/cross-over/drill collar of respective sizes.

6. TUBING CONVEYED PERFORATION

6.1 Ported Flow Sub with Glass/ Ceramic Disk Below Ports Along With Redress Kit

a) Top Connection : 2.875" 6.5 ppf EUE Box
b) Bottom Connection : 2.875" 6.5 ppf EUE Pin
c) Material : L-80
d) Minimum ID : 2.44"
e) Maximum OD : 3.67"
f) Glass Description : Minimum 0.375" thick
g) Other: The flow area of the ports must be greater than the flow area of the tubing
h) Temperature Rating: 400°F

6.2 Safety spacer for vertical shock absorption

a) Maximum OD: Same as that of loaded gun
b) Top Connection: As required to make up to firing head
c) Bottom Connection: As required to make up to safety spacer and or ERHSC
d) Material: As required to meet the conditions described in preamble
e) Length: 10 ft minimum
f) Temperature Rating: 400° F minimum

6.3 PERFORATING GUN FOR 4-1/2" CASING / LINER

a) Maximum OD: 2-7/8" Suitable for casing ID
b) Charge Type: HNS for use at 400°F.
c) Charge Size: The largest possible that will fit the 3-3/8" gun
d) Shot Density: Minimum 6 spf
e) Shot Phasing: 135/45 deg or 150/30 deg
f) Entry Hole Diameter: 0.30 inches
g) Penetration Depth: 26 inches
h) Prima Cord: HNS or other suitable for use at 400°F.
i) Temperature Rating: 400°F minimum
j) Top Connection: As required to make up to safety spacer and or ERHSC
k) Bottom Connection: As required to make up to safety spacer and or ERHSC
l) Material: As required to meet the conditions described in Preamble

6.4 PERFORATING GUN FOR 7" CASING / LINER

a) Maximum OD: 4.5"
b) Charge Type: HNS for use at 400°F.
c) Charge Size: The largest possible that will fit the 4.5" gun
d) Shot Density: 12 spf
e) Shot Phasing: 135/45 deg
f) Entry Hole Diameter: 0.42 inches
g) Penetration Depth: 35.97 inches
h) Prima Cord: HNS or other suitable for use at 400°F.
i) Temperature Rating: 400°F minimum
j) Top Connection: As required to make up to safety spacer and or ERHSC
k) Bottom Connection: As required to make up to safety spacer and or ERHSC
l) Material: As required to meet the conditions described in Preamble

6.5 PERFORATING GUN FOR 9-5/8" or 9.7/8" CASING

a) Maximum OD: 7"
b) Charge Type: HMX or other suitable for use at 350°F
c) Charge Size: The largest possible that will fit the 7" gun
d) Shot Density: 12 spf
e) Shot Phasing: 135/45 deg

f) Entry Hole Diameter: 0.43”
g) Penetration Depth: 43.15 inches
h) Prima Cord: HMX or other suitable for use at 350°F.
i) Temperature Rating: 350°F minimum
j) Top Connection: As required to make up to safety spacer and or ERHSC
k) Bottom Connection: As required to make up to safety spacer and or ERHSC
l) Material: As required to meet the conditions described in Preamble

It is planned to run the TCP guns along with the test string. However, Company may decide to run TCP guns on wireline or Drill Pipes if required. The Bidder shall be responsible for providing all necessary tools/equipment to run the TCP guns on wireline or Drill Pipes.

Bidder should provide separate prices for Perforating guns and accessories for “Shoot and Drop” and “Shoot and Retrieve” scenario as per Table FF in Price Schedule.

6.6 PRESSURE ACTIVATED FIRING HEAD WITH REDUNDANT HYDRAULIC FIRING HEAD FOR PERFORATING GUN ALONG WITH REDRESS KIT

a) Maximum OD: 3.68”
b) Top Connection: As required to make up to tubing/ ported flow sub above.
c) Bottom Connection: As required to make up to safety spacer
d) Material: As required to meet the conditions described in preamble
e) Temperature Rating: 400°F minimum
f) Charge Type/Percussion Detonator/Booster: HNS /HMX or other suitable for 400°F

6.7 SUB ASSEMBLY SPACE OUT TUBING PUP JOINTS

a) Top Connection: 2.875”, 7.80 lbs/ft L-80 EUE Box. Equipped with
b) special clearance EUE coupling
c) Bottom Connection: 2.875”, 7.8 lbs/ft EUE Pin.
d) Material: L-80
e) Minimum ID: 2.323”
f) Maximum OD: 2.875” (Nominal Pipe body OD)
g) Coupling: Special clearance with taper ends (3.68” OD)
h) Length: 4 ft/3ft/1 ft

6.8 Provision of Hostile kit jobs beyond 400 Deg F up to 450 Deg F (15 K PSI or more) on Optional basis

SN	Description	Estimated Quantity
1	Additional Redress Kits &/or other items/ equipment for taking TCP jobs beyond 400 Deg F up to 450 Deg F (15 K PSI or more) for use with equipment mentioned above.	4 no.
2	Additional Redress Kits &/or other items/ equipment for DST with Non-rotating Retrievable Packer (4.5"/7"/9-5/8" or 9.7/8") of 425 Deg F, 15 KPSI or more for taking jobs beyond 400 Deg F up to 450 Deg F (15 K PSI or more) for use with equipment mentioned above.	4 no.

OIL shall inform the contractor 7 days before the scheduled date of deployment for keeping the equipment ready for taking up the operation. Subsequently, if such scheduled job is cancelled by OIL and the equipment has been made ready for operation, contractor shall be compensated at 30% of the quoted rate per kit for TCP-Hostile-L-Addl and/or DST-Hostile-Addl respectively, as the case may be.

7. COIL TUBING UNIT & PCTLF SERVICES ALONGWITH PUMPING UNIT

7.1 TECHNICAL SPECIFICATIONS - COIL TUBING UNIT:

Skid mounted Coil Tubing Unit (15K psi rated) should have coiled tubing string of 1.75" size diameter and should be capable of working in at least depth of 6500 m. The CTU should have up to 30% HCl Acid resistance with suitable acid inhibitor. The Coil tubing string shall be new complete with manufacturer's inspection report, including non-destructive inspection of coiled tubing body and welds, details of drift ball test, weld records, ovality and wall inspection report, pressure testing record. The unit is expected to be used for removal of gas hydrates, well activation, well bore cleaning operations, cement drilling, clearing inside tubing obstruction and other required operations as given in scope of work. The unit should be provided with following:

7.1.1 Hydraulic power system:

a) Zone II rated diesel driven. Gas detector and engine over speed shut down system. Skid mounted with crash frame protection. Ideally recommended DNV specifications.
b) Suitable hydraulic drive mechanism to power Tubing Reel Drum, BOP hydraulic system, Spray bar system etc. and all required drive power for the coiled tubing unit hydraulic system.
c) Suitable high pressure hand pump to provide backup power to BOP cylinder, Stripper/packer, Injector skate traction, Injector chain tension.
d) Suitable high pressure BOP accumulator system with a volume capacity more than 1.5 times the actual BOP required capacity and a constant back-up hydraulic pressure to the hand pump system.

7.1.2 Injector Assembly:

a. Fail safe stop system if hydraulic power lost. Automatically or manual brake, which is set when the injector is stopped. Weight cells with both positive and negative weights. Hydraulic stuffing box (15,000psi WP) sized appropriately for 1.75" coil tubing. Adjustable hydraulic force control. Hydraulic force displayed in control cabin. Pull capacity 140% of maximum expected work string weight. Snubbing capacity 120% of maximum anticipated snubbing force. Goose neck assembly with tapered rollers and an arc radius matching to reel/drum diameter. Injector head should include a fall-safe stop system for manual working on top of the injector. Ideally recommended manufactured to DNV. 2.7.1
b. Injector should be equipped & capable of handling 1.75" OD coil tubing of at least up to 6500m and must have adequate continuous pulling & continuous snubbing capacity.
c. Tubing goose neck: Fold down roller type / non-folding, detachable with wider shapes at entry point for smoother entry of tubing from tubing reel to the gooseneck.

7.1.3 Reel assembly with coil tubing:

a. Should be skid mounted with spreader bar with lifting slings for lifting reel assembly and tubing drum.
b. Fluid manifolds as required.
c. String isolation valve upstream of the reel axle and swivel joint.

d. Pressure relief valve upstream of the reel axle and swivel joint c/w protection cap. Hydraulic motor. Adjustable back force tension.
e. Hydraulic hose package to CT power pack. Included ball and dart launcher facility.
f. Capacity at least 6500m of 1.75" OD coil tubing of Nominal wall thickness.
g. The Coil Tubing should have up to 30% HCl Acid resistance with suitable acid inhibitor.
h. Hydraulic drives motor with integral fail-safe disc brake assembly through a chain and sprocket arrangement with cross relief valve protection for motor.
i. Rotary joint 15,000 psi working pressure, flanges mounted to the reel main shaft to facilitate continuous circulation during operation.
j. Drive system of reel assembly should hold tension on the drum at all times regardless direction of travel or injector speed.
k. Isolation valve/plug valve should be mounted between the rotating joint and the tubing on the drum.
l. Suitable mechanical counter for tubing depth measurement calibrated in meters.
m. In addition to mechanical depth meter and electronic digital depth showing system is also required with display in control cabin with suitable design for data acquisition in real time.
n. Protective guards for reel and level wind drive chain.
o. Suitable arrangement to record liquid flow rate in the control cabin, either through flowmeter or proximity sensor/pump rate counter with suitable transducer.

7.1.4 Control Cabin:

a. Zone II rated control console with all necessary controls and instrumentation required for efficient and safe operations.
b. Cabin position in such a way that the CTU engineer has the visibility above the tubing spool. Complete internal and external lighting, air horn etc.

7.1.5 Dual Stripper Assembly:

Hydraulic dual strippers (15,000 psi Working Pressure and 22,500 psi Test Pressure), fitted with sealing element for 1.75" OD tubing.

7.1.6 Blow out preventer (BOP's):

a. One hydraulically operated solid block flange ended BOP having ram provision, suitable for 1.75" size coil tubing with pipe rams, slip ram, shear ram and blind ram. Rated at 15,000 psi Working Pressure, 22500 Psi Test Pressure. Well control equipment systems are to be according to API RP 16ST.
b. The BOP should have up to 30% HCl Acid resistance with suitable acid inhibitor
c. Hydraulic panel operated.
d. Visual ram movement indicators.
e. Interchangeable rams capability.
f. Manual ram lock facility.
g. Metal to metal seal.
h. Shear blind capability shall be available when the coiled tubing is unloaded, in tension or in compression.
i. Frame mounted and ideally recommended manufactured to DNV. 2.7.1
j. Bottom swage/changeover for interface with BOP bottom connection. Lifting hooks/arrangements for lifting BOP separately.
k. All required High Pressure hose assemblies for connecting various points tubing injector drive injector/BOP/Striper packer control hose racks etc., equipped with quick disconnects on one end and tagged with stainless steel washers.

7.1.7 CT Riser Equipment:

a) 15K psi WP. Metal to metal sealing, flanged lubricator/riser section set. Changeover / adapter flanges for rig up of risers to connect to the well system.
b) Quick test sub.

7.1.8 Flow head Crossovers:

a) Flow head acme connection to 15000 psi WP. Metal to metal sealing, flanged face up. Quantity two (2) to be provided.
b) Suitable crossovers to Rig-up CTU with drill pipe in hole shall be provided by contractor.

7.1.9 CT Motor Head Assembly:

a) Motor head assembly including CT connector, down hole motors, pull test sub, venturi junk basket, emergency disconnects, dual check valve, circulating subs, full bore and working wash/jet nozzles.
b) Even though not specified, all the down hole tools of required dimensions & ratings necessary for intended operations, are to be provided by the contractor.

7.1.10 Support Container:

Coiled tubing services support container. Includes, pipe work loops with plugs valves, basic fishing package, milling tools & nozzles capable of running in tubular of sizes varying from 2-7/8" to 4-1/2" along with all required accessories like motor, external connector, internal connector, hand tools, spare hydraulic hoses, spare parts, oil, filters, hydraulic power oils, environmental spill kits, pressure test pumps etc.

7.2 TECHNICAL SPECIFICATIONS – PUMPING UNIT:

Skid mounted, Zone II rated diesel driven, air start heavy duty pumping unit capable of holding, mixing and pumping servicing fluids (water, gel, foam, chemicals etc.,) into wells. The unit should be provided with following:

a) Horizontal single acting triplex / quintuplex pump maximum working pressure 15000 psi. Discharge rate minimum 63 gpm at 12000 psi. Suction manifold provision to take liquid directly from an external source.
b) The pump should be suitable for handling water, saline water, crude oil, HSD, Acid, viscous gel, solvent etc.
c) The Pumping Unit should have up to 30% HCl Acid resistance with suitable acid inhibitor
d) Gas detector and engine over speed shut down system.
e) Control console complete with all the necessary instrumentation and controls for safe and reliable operations.
f) Relief valves, on / off valves, flow controls, pressure gauges and all necessary suction and discharge hoses/pipework should be provided.
g) All required connections including high pressure pipes, valves, and swivels etc. for carrying out oil field operations.

7.3 TECHNICAL SPECIFICATIONS – PIVOTAL COIL TUBING LIFTING FRAME

a) PCTLF [Pivotal Coil tubing Lifting Frame]: Min Lifting Capacity 350 Tons
b) The PCTLF needs to be a part of the Landing String Assembly once the Testing Phase Starts in order to cover all contingencies of Well intervention through Coiled Tubing. Thus, the PCTLF will always be in operation during the testing phase at the Floater Rigs.
c) Pivoted Coil Tubing Lifting Frame (PCTLF) complete with all accessories required to install / operate the unit for well intervention operations. This may be a solid frame or top & bottom beams connected by wire slings or any other mechanism which can facilitate coil tubing and other well intervention operations with slickline / wireline etc. in floater rigs. Any work platforms shall be removable and designed to avoid interfering with the rig up. The PCTLF shall have a 6-5/8" lift sub at the top to connect elevators.
d) The PCTLF shall be as per latest API8C guidelines and for rig safe operations.
e) PCTLF shall be suitable to accommodate and operate CTU through 3 1/16" control head. All suitable primary and backup crossovers for interface with landing string / surface flow tree system are to be provided to rig up CTU above control head. Details of interface dimensions will be provided.
f) The PCTLF shall have safe working load of minimum 350MT and to be rated for holding the weight of DST string assembly including CT stack, 3" SSTT, 4 ½" landing string, and 3 1/16" well testing surface control head.
g) PCTLF dimensions shall be compatible to get installed and operated for exploratory testing of scope of work at the drilling.
h) Flow head Crossovers: Quantity two (2 no.) per set of PCTLF each to be provided by contractor.

7.4 For the above-mentioned scope of work is to be performed in Offshore from a Drill ship and for successful execution of the job, the contractor shall provide following:

a) Pivotal Coil Tubing Lifting Frame and trained service personnel. Equipment shall conform to technical specifications. Crossovers/Changeovers required for hook of its equipment's to well is also in the scope of contractor.
b) Any job involving the use of PCTLF unit shall have to be carried out by the contractor as and when necessary.
c) The availability of PCTLF shall be ensured for safe and timely completion of planned wells throughout the contract period.

d) The contractor shall also provide the required competent personnel to execute the above-mentioned job/ services safely and timely.

e) The Contractor shall provide all the accessories required for operating and maintaining the equipment: PCTLF.

f) The Contractor shall provide all auxiliary equipment, tools, shackles, spares, consumables, etc. required for operating and maintaining their equipment with inspection certificates. All necessary work baskets and transport baskets shall be provided by the Contractor with lifting gear fully inspected and certified.

g) The entire equipment shall be maintained by the Contractor so as to ensure their one hundred per cent availability at all times.

h) The Contractor shall provide all lubricants, oil, grease etc. required for maintenance of all equipment provided by them under the Contract.

i) The Contractor shall provide standard Handling tools required for the operations.

j) The Contractor shall maintain adequate stock level of all required materials and spare parts at site, to ensure smooth and uninterrupted services as per Scope of Work.

k) The Contractor shall provide a detailed plan of Layout of the Equipment, clearly displaying each of the equipment's to ensure Safety of Well & Drilling Rig.

l) All the contractor's personnel need to be abiding by safety regulations as applicable in oil and gas industry and as enforced from time to time by statutory bodies and OIL.

m) Contractor shall provide safety kits & liveries to all crew members at his cost.

n) The list is indicative and any other equipment necessary to complete the scope of work is to be included in the primary equipment list and provided by contractor to carry out operations smoothly & efficiently in the rig.

o) As a minimum, latest governing documents shall be referred with specific codes and recommended practices to be used detailed in the individual discipline specifications and design basis as applicable. In all cases, the latest edition of the relevant regulations, codes, standards and guidance notes shall be used.

p) CTLF will be rigged up above the control head (Prior to start of well Testing) and will be rigged down after completion of Well Testing Operations. Well Testing String will be comprised of DST/TCP tools at bottom and SSTT tools at subsea level.

q) Contractor shall address interface related issues related with CTU/N2/PUMPING equipment with other contracts on board the rig for timely execution of the jobs in

safe manner. All additional equipment required for such interfaces shall be provided by Contractor.

r) Fishing Equipment:

- The Contractor shall provide all the required fishing tools for all their tool/equipment lowered in the well along with the necessary crossover to OIL without any extra cost.
- Contractor to provide adequate quantity of fishing tool on the rig/base for the entire period of contract.

8. SLICK LINE SERVICES:

8.1 The Slickline service is for well including but not limited to the following jobs:

8.1.1 Reservoir Testing and Well Bottom Tagging

The following jobs are required to be carried out during reservoir testing.

a) Pressure build-up studies, pressure draw-down studies, influx.
b) Studies, pressure fall-off studies, modified isochronal studies,
c) Reservoir Limit Test (RLT), Pressure interference test
d) Pressure gradient survey, Temperature gradient survey.
e) Well Bottom Tagging

8.1.2 Well Bottom Tagging

Under well bottom tagging, the job involves tagging well bottom by slickline induced tool in live or shut in wells using slickline unit. It involves lowering of Slick line along with different size tools to the bottom of the well or to the final depth as decided by the Company. For different jobs, different tools need to be run in like Tubing gauge, Tubing swage, Sand bailer, Tubing broach, Impression block, Blind box, Star bit, Locator tool, Hydrates breaking tools etc.

8.1.3 Fish Recovery with Slickline unit

Fishing operation involves recovery of downhole fish lying inside the well bore using slickline conveyed fish recovery tools. The fishes are of different types and shapes.

Experienced hands and necessary fish recovery tools are required for the job. The depth for fish recovery job may vary from 1 – 7500 m.

8.1.4 Sub surface and surface Reservoir fluid sampling

This job involves lowering PDS samplers for collection of reservoir representative bottom hole reservoir fluid samples and transferring them to shipping bottles for further PVT analysis. In case of high GOR wells, surface sampling also to be carried out and Bidder has to provide gas & liquid sampling bottles for collection of surface samples.

8.1.5 Any other job not covered above.

Any other job not spelt out above but involving the use of slickline unit and other equipment (if any) shall have to be carried out by the Bidder as and when necessary.

8.2 Scope of Work:

The work is defined and described by, but not necessarily limited to, any or all of the following. The Service provider shall -

a) Provide adequate equipment and personnel required to carry out slickline operations in the well.
b) Provide Slickline services for Bottom hole tagging, Fish recovery, collection of reservoir representative bottom hole reservoir fluid samples etc.
c) Provide PDS samplers, transfer bench and shipping bottles along with all relevant accessories for collection of sub surface reservoir fluid samples for PVT analysis. Also provide gas sample collection cylinders and liquid sample collection cylinders for surface reservoir fluid sample collection for PVT analysis.
d) Provide final report and all relevant data gathered at the end of each operation both as soft and hard copies.
e) Arrange and store sufficient spares and consumables for the units along with the manpower so that no interruption occurs on account of non-availability of spares and manpower.

8.3 Specification of accessories:

Double drum hydraulic Slick-line winch compatible to sour service(H2S) with power pack complete with 0.108" X 25,000 ft (min) slickline on one drum and 0.125" X 25,000 ft (min) slickline on the other drum. The detail specification of the unit is as under:

8.3.1 Spooling/Measuring Assembly

a) Level wind (spooling) assembly/counterwheel/depth measuring device shall be equipped.
b) Type O-measuring meter with minimum 10-inch register wheel, metric calibration.
c) Mechanical depth counters with cable and casing at operator's console, metric counters assembly.
d) Martin Decker or its equivalent weight indicator along with suitable hose and loadcell (one extra should be present as spare at all times)
e) Any other type of measuring device (viz. digital) provided shall be additional to the Mechanical counter.

8.3.2 Line Speed & Pull Desired

a) The unit shall be preferably of the following specification:
b) Max. 2700 FPM (820 M/MIN).
c) Max. 7400 Lbs. (3363 KG)- Adjustable by suitable hydraulic valve in the hydraulic circuit.
d) Capable of maintaining constant line speed of 15 ft/min and 50 ft/minute

8.3.3 Other fittings and accessories:

a) The hydraulic slickline winch compatible to H2S sour gas service having dimension of 0.108" X 25,000 ft (min) in one drum and other drum with 0.125" X 25,000 ft (min) fitted onboard to the slickline unit.
b) Slickline tool string size: 1.75”
c) Measure meter (Remote readout/Veeder counter assembly) metric unit for both the lines - 2 nos.
d) Hay pulley assembly (for 0.108" and 0.125" slickline) -1 no.
e) Slickline Wire Clamp suitable for 0.108” and 0.125” wire - 2 nos.

f) Martin Decker weight indicator along with load cell and suitable hose- 1 no. each per unit. (One extra as spare)

g) Hydraulic Stuffing Box with 16" Sheave adaptable to slickline wire size 0.108" and 0.125" along with necessary hoses and handpump - 2 nos. Rating -W.P 15K (Standard) each.

h) 4" ID Lubricator assembly for 15000 psi total length not less than 32 feet complete with Quick Union. (One set with each unit).

   i) LUB ASSY 4" ID x 8FT - 1 non ported, 1 ported (1/2" NPT) = 24 ft

   ii) LUB ASSY 4" ID x 4FT - 1 ported (1/2" NPT), 1 non ported = 8 ft

i) Wireline BOP, Dual ram hydraulic 15000 psi, for 0.108" and 0.125" wire, hand pump operated and adoptable to Flow head.

j) Quick Test Sub 4" ID - 1 nos. Rating-W.P 15 K (Standard) psi

k) Necessary Crossovers/ Adaptor spool to connect Pressure control equipment with Flow Head.

l) Suitable Digital Tension measuring system (Line Minder) associated with Slickline Unit in addition to normal load cell (martin Decker' Combi gauge) type along with required accessories - 01 no.

m) Slickline Fishing Clamp or T Bar Clamp with suitable inserts of 0.108" and 0.125" wire - 2 (two) nos.

n) Digital Weight, Speed, Impact recorder compatible with Slickline unit - 01 no.

For Slickline Services, the list of equipment (slickline unit and Downhole Tools) to be provided by the Bidder are as follows:

S.No.	General	Qty	Description
A.	General	1	Rig up height – ~60 ft.
			Main deck space – 5.5 m x 2.0 m to be available to accommodate suitably sized units & equipment
			Capable of running all available wireline tools and third-party tools
			Equipped with spares and hand tools to be able to operate independently.

B.	Winch unit & Slickline – DOUBLE DRUM	1	Double drum hydraulic Slick–line winch Unit (Zone -II) having compatible to H2S gas service with 0.108" X 25,000 ft (min) slickline on one drum and 0.125" X 25,000 ft (min) slickline on the other drum. The detail specification of the unit is as under:
1.			Spooling/Measuring Assembly
2.			Level wind (spooling) assembly / counterwheel / depth measuring device shall be equipped.
3.			Type O–measuring meter with minimum 10–inch register wheel, metric calibration.
4.			Mechanical depth counters with cable and casing at operator's console, metric counters assembly.
5.			Martin Decker or its equivalent weight indicator along with suitable hose and loadcell (one extra should be present as spare at all times)
6.			Any other type of measuring device (viz. digital) provided shall be additional to the Mechanical counter.
7.			Line Speed & Pull Desired
8.			The unit shall be preferably of the following specification:
9.			Max. 2700 FPM (820 M/MIN).
10.			Max. 7400 Lbs. (3363 KG) – Adjustable by suitable hydraulic valve in the hydraulic circuit.
11.			Other fittings and accessories:
12.			Slickline (0.108" x 25,000 ft (min) piano slickline and 0.125" X 25,000 ft (min) slickline compatible to H_2S Sour service) – one of each reel fitted with the unit.
C.	Power Pack	1	Power Pack
			Complete with spark arrestor (Zone-II Power Pack), safety shut down system, inertia starter, air/water cooled and equipped with all the necessary gauges to monitor operating conditions

			Capable of maintaining constant line speed of 15 ft/min and 50 ft/minute.
			Necessary hoses, fittings and connections to use this Power pack with Double drum unit
1.		1	4” ID BOP Double ram hydraulic BOP 15000 psi Working Pressure Complete with rams dressed for 0.108” and 0.125” wire Otis type 6.1/2” −4 acme or equivalent thread quick connections at top & bottom
			Hand pumps with 50 ft hose set to open & close BOP Equipped with equalising valve manifold and hydraulic cylinders supplied on shipping frame / Test stump Good for sour service will be supplied with Lift cum test plug at top & bottom blind
2.		2	Lubricator sections of 4’ lengths, 15000 psi
3.		4	Lubricator sections of 8’ lengths, 15000 psi
4.		1	Lubricator Lifting clamp for 4"Lubricators
5.		1	Quick Test Sub – 4”
6.		1	Lubricator racks for 4” lubricators
7.			Suitable for transportation with full load
8.		2	Hay pulley for 0.108” & 0.125"wire.
9.			4" ID Hydraulic stuffing box, 15000 psi Working Pressure Otis type 6.1/2" 4 Acme or equivalent thread quick unions 16” sheave and bracket assembly, Hand pump with 80 ft hose set Bottom blowout gland Good for sour service
10.		2	Wire clamp for 0.108” & 0.125" wire.
11.		1 set each	Test Cap and Test Plug for all Bowen/Otis connections provided
12.		1	Wire Tester to test wire (Wrap Testing)
13.		2	Wire fishing clamp

14.		1	Pneumatic pressure test pump with 15000 psi working pressure rating, Bidder to provide zone–2 rated electrical equipment's wherever applicable. All diesel driven IC engine / equipment's shall be installed with spark arrestor and shall be fit for purpose
15.		1	Tool shack, containerised, to store tool string, wireline tools, hand tools, spares, complete with shelves, cupboards, racks, bench, vice etc. for tool redressing.
16.		1 set	All spares, tools, equipment required to maintain the above and ensure uninterrupted service.
17.		1	Toolbox to store/transport 1 set of tools to and from various offshore locations
18.		1	Unit should have provision to operate the stuffing box and BOP from operator cabin through remote control
19.		1 each size	Lubricator Lifting clamp for 4" Lubricators

Following tools shall be provided for Slickline Services:

S.No.	Description	Qty
A	1-7/8" QLS tool string including but not limited to the following:	
1.	rope socket (Pear Drop Size)	2
2.	(5 ft, 3 ft, and 2 ft) normal stem	2
3.	(5ft, 3ft and 2 ft) Lead Filled stems	1
4.	(5ft, 3ft and 2 ft) Roller Stems (1 set roller OD: 2", 1 set roller OD: 2.5")	1
5.	knuckle joints	3
6.	Swivel joints	1
7.	30" spang jar (Stroke length – 30 inches)	1
8.	20" spang jar (Stroke length – 20 inches)	1
9.	accelerator	1
10.	tubular jar	1
11.	Flopetrol power / HD spring jar	1

12.	hydraulic jar	1
13.	Spring jars	1
14.	Roller Centralizers (OD: 2.25")	1
15.	Centralizers with inbuilt Swivels	1
16.	Dummy Rope Socket	1
17.	bowsping centralizer	1
B	Tools:	
1.	Gauge Cutter:	
2.	4” Gauge cutter	1
3.	3.8” Gauge cutter	1
4.	3.7” Gauge cutter	1
5.	3.5” Gauge cutter	1
6.	3.4” Gauge cutter	1
7.	3.2” Gauge cutter	1
8.	3.0” Gauge cutter	1
9.	2.8” Gauge cutter	1
10.	2.7” Gauge cutter	1
11.	2.5” Gauge cutter	1
C	Blind Box:	
1.	3.5” Blind box	1
2.	3” Blind box	1
3.	2.5” Blind box	1
4.	2” Blind box	1
D	Lead Impression Block (Nominal size):	
1.	4.0” LIB	1
2.	3.70” LIB	1
3.	3.5” LIB	1
4.	3.2” LIB	1
5.	3” LIB	1
6.	2.8" LIB	1
7.	2.70” LIB	1

8.	2.5” LIB	1
E	Godevil:	
1.	1–7/8” x 1 no. 5 ft Godevil (cutter Bar type)	1
2.	1–7/8” x 1 no. 3 ft Godevil (cutter Bar type)	1
3.	1–7/8” x 1 no. 5 ft Godevil (Flat bottom type)	1
4.	1–7/8” x 1 no. 3 ft Godevil (Flat Bottom type)	1
5.	Kinley Snapper & Cutter:	
6.	1–1/2” Kinley snapper with drop bar	1
F	Wire Finder Split Skirt (Nominal size):	
1.	4” xsplit skirt wire finder	1
2.	3.5” split skirt wire finder	1
3.	3” split skirt wire finder	1
4.	2.5” split skirt wire finder	1
5.	2” split skirt wire finder	1
6.	various sizes of Centre spears (1.5", 1.875", 2" & 2.5", 1 each)	2
7.	various sizes of 3-legged wire grabs (2.625", 3.375" & 3", 1 each)	2
G	Universal Pulling Tool:	
1.	2” UPT	1
2.	2.5” UPT	1
3.	3” UPT	1
4.	4” UPT	1
5.	Pulling Tools:	
6.	2", 2.5", 3" and 4" JDC	1
7.	2", 2.5", 3" and 4" JUC	1
H	Bell Guide:	
1.	Set of Bell guides to suites 3 1/2", 4 1/2" and 5 1/2" tubing (bell guide O.Ds 2.25", 2.7", 3.25" and 4")	1
2.	Slip Over Bow Spring Centralizer (for 1.5" tool string, 2.13"–5.5" OD range)	1

3.	Heavy duty releasable Bulldog Spear Collet Slip type (2.5", 3" & 4" Size, Slip range from 1.75" to 3.375")	1
I	Tubing End Locators:	
a.	Tubing end locators	1

ANNEXURE-II

QUALIFICATION AND EXPERIENCE OF PERSONNEL

1. WELL TEST COORDINATOR

The Well Test coordinator shall have experience of minimum 5 years in carrying out SSTT and production testing operations including 2 years as testing supervisor / coordinator for offshore well testing operations. He shall have tested at least 3 wells or 10 objects in locations in Semi sub/Drill ships. The testing coordinator shall be able to work as an expert of well testing and shall be able to supervise operations, repair and maintenance of SSTT and PTS equipment during well testing. He shall be well versed with the latest testing technology, work procedures, in accordance with internationally recognized safe well testing methodology. The Well Test Coordinator shall be available in Kakinada /OIL's Shore Base / at drilling rig site based on the company's requirement and shall be the single point of contact between the Company and Bidder for executing scope of work as mentioned in Exhibit 11 (TCP, DST, SSTT, SPT, NPU, CTU, CTLF & Slickline Services). Well Test coordinator shall be responsible for working closely with the Company to apply the appropriate planning, design and execution of Well Testing activities to benefit both the Company and the Bidder by offering specific solutions to cater to requirements. He shall be responsible for ensuring the preparation and dispatching of equipment and the execution of services in the field. The Well Test Coordinator shall also be responsible for planning, organizing, leading and controlling the HAZID, HAZOP, and Service Delivery Process, to ensure that the Bidder delivers consistent and superior service quality. The coordinator shall provide draft testing program to the company prior to commencement of operation covering contingency plans & procedures for each zone to be tested. Activity wise work instruction shall also be submitted for approval.

He shall also be based at Wellsite and will be required to co-ordinate & execute all the operations (TCP, DST, SSTT, SPT, NPU, CTU, CTLF & Slickline services) during well testing operations as per the well test program & work instructions including any changes in the program in the interest of well test operation.

2. OPERATING PERSONNEL FOR SSTT AND PRODUCTION TESTING SURFACE EQUIPMENT:

The Bidder shall provide a team of technically qualified and experienced personnel as mentioned below:

a) Well Test Supervisor
b) Well Test Specialist
c) Well Test Operator
d) SSTT Specialist
e) SSTT Operator
f) Data acquisition & Interpretation specialist

The above personnel will be responsible for operation and maintenance of SSTT and SPT equipment and also for carrying out well testing safely and successfully.

The scope of well testing will include the following: -

1. To recommend Well testing plan including string design and SPT equipment layout to the Company for approval.
2. To suggest well testing methodology and string design to do the production testing successfully.
3. To carry out SSTT and well testing operations, flow studies, data acquisition & Interpretation etc.
4. To overcome operational complications such as hydrate formation, paraffin problem, sand incursion, high concentration of H2S etc.
5. To prepare and submit well testing report

2.1 WELL TESTING SUPERVISOR

Well testing supervisor shall have a minimum of 5 years' experience in carrying out offshore SSTT and production testing operations, including 2 years as testing supervisor. He shall have tested at least 3 wells or 10 objects in Semi sub/Drill ships.

The testing supervisor shall be able to work as an expert of well testing and shall be able to supervise operations, repair and maintenance of SSTT and SPT equipment during well testing.

He shall be well versed with the latest testing technology, work procedures, in accordance with internationally recognized safe well testing methodology.

He will also be responsible for preparing the different production testing plans as per the scope of work, for approval of the Company.

2.2 WELL TEST SPECIALIST

Well test specialist shall have a minimum of 5 years' experience in carrying out offshore production testing, including 2 years as well test specialist. He shall have tested at least 2 wells or 07 objects in Semi sub/Drill ships.

The well test specialist shall be able to carry out all well testing jobs as well as operations, repair and maintenance of SPT equipment'.

2.3 WELL TEST OPERATOR

Well test Operator shall have a minimum of 3 years' experience in operating production testing surface equipment in in Semi sub/Drill ships.

2.4 SSTT SPECIALIST

The SSTT Specialist shall have minimum 5 years of experience as SSTT Operator and must have worked on SSTT for 3 wells in Semi sub/Drill ships.

2.5 SSTT OPERATOR

The SSTT Operator shall have minimum 3 years' experience as SSTT Operator and must have worked on SSTT for 2 wells in Semi sub/Drill ships.

2.6 DATA ACQUISTION, PROCESSING & INTERPRETATION SPECIALIST

Person should have minimum 3 years of experience in Processing and interpretation of offshore wells and shall be responsible for data acquisition, interpretation and well test report.

The person is to report to Well Test Supervisor for any abnormality in the operation.

3. OPERATING PERSONNEL FOR TCP AND DST EQUIPMENT:

The Bidder shall provide a team of technically qualified and experienced personnel as mentioned below.

a) TCP Specialist
b) TCP Operator
c) DST Specialist
d) DST Operator

The above personnel will be responsible for operation and maintenance of SSTT and PTS equipment and also for carrying out well testing safely and successfully.

3.1 TCP SPECIALIST:

TCP specialists should have a minimum of 5 years' experience in carrying out TCP operations, including 2 years as TCP specialist in Offshore Wells and must have worked on

TCP for 3 wells in Semi sub/Drill ships. The TCP specialist should be able to carry out all TCP jobs as well as Testing operations.

3.2 TCP OPERATOR:

TCP Operator should have a minimum of 3 years' experience in operating TCP equipment in offshore wells and must have worked on TCP for 3 wells in Semi sub/Drill ships.

3.3 DST SPECIALIST:

DST specialists should have a minimum of 5 years' experience in carrying out DST operations, including 2 years as DST specialist and must have worked on DST for 3 wells in Semi sub/Drill ships. The DST specialist should be able to carry out all DST jobs as well as operations.

3.4 DST OPERATOR:

DST Operator should have a minimum of 3 years' experience in operating DST equipment in offshore wells and must have worked on DST for 3 wells in Semi sub/Drill ships.

4. NITROGEN PUMPING (NPU) SERVICES AND SLICKLINE SERVICES

4.1 NPU SPECIALIST

The NPU specialist shall have minimum 5 years of offshore experience in operation and maintenance of well activation service equipment, ie., NPU.
The person will be responsible for all the operation and maintenance of NPU service.

4.2 NPU OPERATOR

The NPU operator should have minimum 3 years offshore experience in operation and maintenance of NPU.
The person will be responsible for all the operation mentioned in well activation service under Scope of work.

4.3 SLICKLINE SPECIALIST

The Slickline specialist shall have minimum 5 years offshore experience in operation and maintenance of slickline service equipment.

4.4 SLICKLINE OPERATOR

The Slickline operator should have minimum 3 years offshore experience in operation and maintenance of Slickline unit.

The person will be responsible for all the operation mentioned in slickline service under Scope of work.

5. COILED TUBING & CTLF

The Bidder shall provide a team of technically qualified and experienced personnel as mentioned below:

a) Coil Tubing Supervisor
b) Coiled Tubing Engineer
c) Coil Tubing Operator
d) Coil Tubing Assistant Operator
e) Pumping unit operator
f) PCTLF Operator

5.1 COIL TUBING SUPERVISOR

Minimum 5 years of Experience in CT operations and competent to carry out the assigned jobs safely and successfully in Semi sub/Drill ships. Very good knowledge of all aspects of operation.

5.2 COIL TUBING ENGINEER

Minimum 3 years of Experience as a Coil Tubing Engineer/Supervisor and should have good knowledge & experience to run all down hole tools and experience for every operation as per of scope of work.

5.3 COIL TUBING OPERATOR

Minimum 3 years of Experience as Coil Tubing Operator in operation of CTU

5.4 COIL TUBING ASSISTANT OPERATOR

Minimum 2 years of Experience in operation of CTU

5.5 PUMPING UNIT OPERATOR

Minimum 3 years of Experience in operation of pumping unit (triplex / quintuplex pump).

5.6 PCTLF OPERATOR

Minimum 3 years of Experience in PCTLF installation and handling during operation in Semi sub/Drill ships. Good knowledge of all aspects of operation

6. Other Crew Members:

Personnel deployed by the Bidder, other than the mentioned above, in any operation should have minimum 2 years offshore experience in their relevant field.

Notes to well Testing Services, Surface and downhole Tools:

a) The Bidder shall provide above competent personnel with requisite experiences & qualifications on round the clock basis and deploy accordingly without compromising statutory norms.
b) OIL reserves the right to decide for engagement of these personnel on the basis of verification of relevant documents prior to engagement.
c) On issuance of mobilisation notice, the bidder should submit a list of personnel along with CV who are likely to be deployed for the subject services from bidder's HR to the Company for approval. They should fulfil the above qualifications and experience criteria.
d) The Bidder should agree to maintain the equipment in good operational condition throughout the contract period. The Bidder shall provide and maintain sufficient quantities of spare parts, tools, consumables etc. that are necessary for maintenance and operation of the equipment at no extra cost to Operator.
e) The Bidder must provide Surface Production Testing, well activation/stimulation/killing, surface sampling services confirming to good oil field practices comparable to international standards.
f) The Bidder shall ensure that the equipment quoted is complete in all respect to carry out the operations successfully, specified in Tender documents. The Bidder shall provide and maintain sufficient quantities of spare parts, tools, consumables etc. that are necessary for maintenance and operation of the equipment at no extra cost to company.
g) The Bidder shall also provide any additional item, tools and services etc., which is not listed in the Tender document but is essential for successful well testing operation without any additional cost to company.

h) All the said personnel should be conversant with the Industry Safety Practices and possess valid certificates pertaining to offshore operations from approved agencies in respect of Sea survival, fire prevention and firefighting and first aid in addition to medical fitness certificate etc.

i) The minimum required manpower mentioned above are indicative in nature. The Bidder shall provide manpower for round the clock operation and deploy accordingly without compromising safety, health & statutory norms. Bidder's manpower may also be accommodated in OSVs depending upon POB availability.

ADDITIONAL SPECIAL CONDITIONS OF CONTRACT

(WELL TESTING SERVICES)

1. DEFINITIONS:

The following terms and expression shall have the meaning hereby assigned to them unless the context otherwise requires:

1.1 "Equipment" means all Surface Production Testing, TCP, DST, SSTT, NPU & Slickline packages and other accessories as listed in the Contract.

1.2 "Operation" means all operations required to be carried out pursuant to this Contract.

2. MOBILIZATION:

2.1 The Bidder shall mobilize the TCP, DST, SSTT, Surface Production Testing equipment, NPU, CTU with Pumping Unit & CTLF and Slickline service to the 1st well within 120 days from the date of mobilization notice.

2.2 Company at its discretion may allow commencing of the operation without complete mobilization; however necessary deduction for short, supplied items will be made as per cost evaluated by Company.

i) For any items supplied by the Company rental will be calculated after amortizing the cost of the item over a period of 5 years applying 15% PTRR (Post tax rate of return). Similar deductions will also be made for short, supplied items.

ii) A deduction will be calculated based on the Company's determined cost, which shall be treated as final, the basis of which shall be provided to the Bidder.

iii) Notwithstanding this provision for partial mobilization, Bidder is deemed to have quoted in accordance with relevant clauses for full mobilization.

3. BIDDER'S PERSONNEL:

3.1 Except as otherwise hereinafter provided the selection, replacement, and engagement; determining remuneration of Bidder's personnel shall be the responsibility of the Bidder. Such employees shall be solely Bidder's employees. Bidder should ensure that its personnel will be competent and efficient. However, the Bidder shall provide details of experience, qualification and other relevant data of the personnel to be deployed for scrutiny and

clearance by the Company before the actual deployment. The Bidder shall not deploy its personnel unless cleared by the Company.

3.2 The Bidder shall have a base office at Supply Base camp at Onshore area be manned by competent personnel, who shall act for the Bidder in all matters relating to Bidder's obligations under the Contract.

3.3 Bidder shall provide all manpower for necessary supervision and execution of all Work under this Contract to Company's satisfaction except where otherwise stated. The minimum number of key personnel to be deployed is mentioned in this document.

3.4 **Replacement of Bidder's personnel:** Bidder will remove and replace any Bidder's personnel within 15 days, who in the opinion of Company, is incompetent, or negligent or of unacceptable behaviour or whose employment is otherwise considered by Company to be undesirable.

3.5 Bidder shall deploy on regular basis, all category of their employee required for economic and efficient Work servicing operations.

4. COMPANY'S REQUISITES:

4.1 Bidder shall, prior to mobilization, furnish to Company a list of all personnel who are to perform the Services. The list shall show each person's qualifications, details of Work history and previous employment with dates, training courses attended, and copies of all pertinent certifications. Personnel must be fluent in written and spoken English.

4.2 If the Bidder plans to change any personnel from the list, the Bidder shall notify Company in advance of the intended change and give Company the above-mentioned particulars of the new person.

Company reserves the right to reject any person on such list, and any subsequent changes to the list.

5. BIDDER ITEMS:

5.7 Bidder shall provide equipment and personnel to perform the services under the Contract as specified in this document.

5.8 Bidder shall be responsible for maintaining at its own cost adequate stock levels of items including spares and replenishing them as necessary.

5.9 Bidder shall be responsible for the maintenance and repair of all equipment and will provide all spare parts, materials, lubricants, consumables etc. during the entire period of the contractual period. Company shall provide Diesel fuel at Drilling unit.

5.10 Bidder will provide all POL for operation of Bidder's equipment at wellsite at Bidder's cost. There shall be no escalation in the day rates and others throughout the duration of the Contract including extension, if any, on account of any price increase in fuel / lubricants.

5.11 Zero-day rate will be applicable for shutdown of operations on account of inadequate supply of Bidder's items, including but not limited to, POL, lubricants, personnel etc.

6. CONDUCTING OPERATIONS:

6.1 The Bidder shall carry out all operations mentioned hereunder with due diligence in a safe and workman like manner and in accordance with accepted international oilfield practices.

6.2 All the equipment and materials to be provided by Bidder shall be in first class working condition.

6.3 Bidder shall be solely responsible for the operation and maintenance of all the equipment and will provide all spare parts, materials, lubricants, consumables etc. during the entire period of the contractual period. Company shall provide Diesel fuel at Drilling unit.

6.4 Upon completion of an operation in a well, statement stating that the well has been completed in accordance with the terms of this Contract and signed by the representatives of both Bidder and Company, will be made available to Company.

6.5 **Safety:** The Bidder shall observe such safety regulations in accordance with acceptable oil field practice and applicable Indian Laws. Bidder shall take all necessary measures reasonably to provide safe working conditions and shall exercise due care & caution in preventing fire, explosion and blow out and maintain fire-fighting equipment in sound condition at all times during the operation. Bidder shall conduct safety drills etc. regularly.

6.6 **Adverse Weather:** Bidder, in consultation with Company, shall decide when, in the face of impending adverse weather conditions, to institute precautionary measures in order to safeguard the well, the equipment and personnel to the fullest possible extent.

6.7 **AMENDMENTS OF COMPLETION & WELL TESTING PROGRAMME:** It is agreed that Bidder shall carry out Operations in accordance with the program to be furnished by Company, which may be amended from time to time by reasonable modification as Company deems fit, in accordance with good oil field practices.

7. BIDDER's SPECIAL OBLIGATIONS:

7.1 It is expressly understood that Bidder is an independent party and that neither it nor its employees and its sub Bidder are employees or agents of Company provided, however, Company is authorized to designate its representative, who shall at all times have access to all the equipment and materials and all records, for the purposes of observing, inspecting and designating the Work to be performed hereunder by Bidder. The Bidder may treat Company's representative at well site as being in charge of Company's designated personnel at well site. The Company's representative may, amongst other duties, observe, test, check and control implementation of operations, equipment and inspect works performed by Bidder or examine records kept at well site by Bidder.

7.2 The Bidder shall furnish full particulars of crews e.g. name, nationality, passport number, date and place of issue and expiry date of passport, father's name, date and place of birth, designation etc., four (4) weeks before the start of activities.

7.3 The Bidder shall primarily and solely be responsible for obtaining customs clearance for importation, if any, into India of the Bidder's equipment, spare parts, consumables etc. in connection with the execution of the Work. Any demurrage in this process will be at the Bidder's cost. Bidder shall bear all requisite port fees, clearance fees, transit agent fees, inland transportation charges from port of importation/point of origin to Company's Site etc.

7.4 The Bidder will be fully responsible for any unauthorized imports or wrong declaration of goods and will have to pay the penalty and other consequences as levied by the port/customs authorities for such unauthorized imports.

7.5 Subject to clauses in 'Special Conditions of Contract', the Bidder shall bear all expenses on account of repair/ replacement of all their equipment etc. consequent upon any damage/ loss/ non-performance during the course of operation.

7.6 The Bidder shall be bound by laws and regulations of Government of India and other statutory bodies in India in respect of use of wireless sets, maps, charts, entry regulations, security restrictions, foreign exchange, work permits, customs etc.

7.7 The Bidder shall use to the fullest extent all facilities available in India provided they are technically/ operationally acceptable.

7.8 The Bidder shall follow its own safety rules, in addition to rules prescribed under Indian Laws in this respect.

7.9 The Bidder shall arrange for security of their camp sites, fly camps, equipment, establishment etc. while in Bidder's custody at their own cost.

7.10 The equipment/tools to be furnished by the Bidder under this Contract is the Bidder's property and shall always remain in the possession of the Bidder with the exclusive right to use of such equipment/tools by the Bidder for providing services under this Contract.

7.11 The Contract Price shall remain firm and fixed during the execution of the Contract and not subject to variation on any account.

7.12 The Bidder shall be responsible for, and shall provide for all requirements of their personnel, and of their sub-Bidder, if any, including but not limited to their insurance, housing, medical services, messing, transportation (both air and land transportation), vacation, salaries and all amenities, termination payment and all immigration requirement and taxes, if any, payable in India or outside at no charge to the Company.

7.13 The Well Test Supervisor shall have all power requisite for performance of the Work. He shall liaise with the Company's representative for the proper co-ordination and timely completion of the job and on any other matters pertaining to the job.

7.14 Compliance With Company's Instructions: The Bidder shall comply with all instructions of Company consistent with the provision of this Contract, but not limited to Work program, safety instructions, confidential nature of information, etc. Such instructions shall, if the Bidder requests, be confirmed in writing by Company's representative.

7.15 WELL RECORDS: Bidder shall keep/provide the record of operation on daily basis of each well on to the Company's Representative.

7.16 Bidder shall arrange for all types of transportation of all equipment, etc. from their Supply base/port of import to the Site and back at the end of the Contract at their own expense. Arrangement of Road Permits and payment of Entry Tax for bringing equipment/material to Workplace shall be Bidder's responsibility.

8. RIGHTS AND PRIVILEGES OF COMPANY:

Company shall be entitled –

8.1 To check the Equipment and other Bidder's items before the commencement of operation. If they are not found in good order or do not meet specifications as per Annexure-I or in

case of non-availability of some of the Bidder's items listed Annexure-I, the Bidder may not be allowed for commencement until the Bidder has remedied such default.

8.2 To approve the choice of sub-Bidder for any essential third-party contract, concerning materials, equipment, personnel and services to be rendered by Bidder.

8.3 To check, at all times, Bidder's stock level, to inspect Bidder's equipment and request for renovation or replacement thereof, if found in unsatisfactory condition or not conforming to regulations or specifications.

8.4 To order suspension of operations while and whenever:

a) Bidder's personnel is deemed by Company to be not satisfactory, and/ or
b) Bidder's equipment does not conform to regulations or to the specifications laid down in the Contract, and/ or
c) Bidder's equipment turns into a danger to personnel on or around the Equipment or to the well, and/or
d) Bidder's insurance in connection with the operations hereunder is found by Company not to conform to the requirements set forth in the Contract, and/ or
e) Bidder fails to meet any of the provisions in the Contract, and/ or
f) Any shortage in key/additional (compulsory) personnel and inadequacy of other personnel.

9. HEADINGS:

The headings of the clauses of the Contract are for convenience only and shall not be used to interpret the provisions hereof.

10. PRE-CHECKS AND PRE-TESTS OF EQUIPMENT/ACCESSORIES:

10.1 The Bidder shall test, carry out all necessary pre-checks and pre-tests of the equipment/ accessories to ensure trouble free and safe operation prior to each job or as instructed by the Company's Representative. Bidder shall record results of all such tests in the daily job report.

10.2 **DISCIPLINE:** The Bidder shall maintain strict discipline and good order among their employees and their sub-Bidder, if any, and shall abide by and conform to all rules and regulations promulgated by the Company. Should the Company feel with just cause that the conduct of any of the Bidder's personnel is detrimental to Company's interest; the

Company shall notify Bidder in writing the reasons for requesting removal of such personnel. The Bidder shall remove and replace such employees at their expense within 7 days from the time of such instruction given by the Company.

11. ASSOCIATION OF COMPANY'S PERSONNEL:

11.1 Company may depute one or more than one representative(s) / engineer(s) to act on its behalf for overall co-ordination and operational management at location. Company's representative will be vested with the authority to order any changes in the Scope of Work to the extent so authorized and notified by the Company in writing. He shall liaise with the Bidder and monitor progress to ensure timely completion of the jobs. He shall also have the authority to oversee the execution of jobs by the Bidder and to ensure compliance of provisions of the Contract.

11.2 Company's representatives shall have free access to all the equipment of the Bidder during operations as well as idle time for the purpose of observing/ inspecting the operations performed by the Bidder in order to judge whether, in Company's opinion, the Bidder is complying with the provisions of the Contract.

11.3 The Bidder should maintain sufficient stock of the critical spare part to avoid any major shut down. Bidder must observe all safety and statutory norms applicable to the Company to prevent surface pollution and injury to personnel working in the area.

Exhibit 12

12. FISHING AND MILLING TOOLS RENTAL SERVICES

1.0 GENERAL

In addition to providing the fishing tools and services, the Contractor shall carry out the following:

a) Maintenance of the tools and equipment.
b) Updating tool inventory.
c) A monthly inventory for the entire rental tools and consumables.
d) A monthly report on consumables consumed in the well with the details of replenishment of the stock to maintain spares level.
e) Tracking movement of tools from shore to rig.
f) Provide tools running / job records, any recommendations, and any other reports as requested.
g) Equipment failure reports.
h) Providing any other programs or reports relevant to the operations and to the contract.

2.0 CONTRACTOR TO PROVIDE

a) Company reserves the right to select any, all, or part of any of the services, equipment, and options specified herein.

b) Contractor shall be able to provide all equipment, labour, materials, and services specified herein. Contractor shall be solely responsible for the operation of Contractor's Equipment including but not limited to the rigging up/preparation, testing, running and laying down thereof.

3.0 Approvals

Contractor shall submit to Company for approval prior to the Commencement Date:

a) All Contractor's tools and equipment with all complete specifications.
b) List of minimum recommended spares.
c) Preventive maintenance schedule and plan for all Contractor's Equipment.

d) Contractor's safety manual and procedures.
e) Detailed Mobilisation Schedule.

4.0 EQUIPMENT AND SERVICE LIST FOR FISHING TOOLS AND SERVICES

A minimum list of Fishing Tools, Services and personnel is provided below. Company reserves the right to order whole or any part of the list as required.

4.1 Personnel

Fishing Supervisor

He will be on call out basis and will perform the following tasks when required:

a) Prepare Fishing tool running procedures.
b) Measure, draw, and visually inspect all fishing tool BHAs.
c) Witness all of the tools being picked up, RIH and operated.
d) Track which tools are used in a daily log.
e) Submit a detailed report on the jobs performed on the rig / base.
f) Summarize all operations with their tools.
g) Summarize any equipment failures.
h) Present a list of accessories that must be replaced after use due to wear or loss (e.g., grapples, packers, cutter blades).
i) Arrange replacement of worn, broken, or missing tools if requested.
j) Make recommendations to improve future operations.
k) Maintenance of all tools, equipment and spare parts.

4.2 Schedules for Fishing tool operator

The fishing tool operator will be required on a call-out basis. Company shall give a maximum of 07 days' notice. The Contractor is required to mention the maximum time an individual is allowed to stay on the rig as per the Contractors company policy. The contractor shall submit CVs of the personnel to the company within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) for Company's approval. The Contractor shall not deploy its personnel unless cleared by the Company.

5.0 Repair, Maintenance and Logistics

The Contractor shall provide the proposal for the provision of workshop facilities and the necessary manpower required at their operations base or agreed upon location in India to handle the servicing and redressing of tools, and the logistics of returning the tools to the drilling site or Company's shore / operations base. For the Contractor having existing workshop facilities and supply base in India for servicing and repairs of tool, Company may exercise the option for servicing of downhole tools at Contractor's Shore Base.

6.0 Reporting

6.1 General

Contractor shall comply with the following reporting requirements as a minimum. Contractor shall also provide additional reports to the Company Representative as may reasonably be requested during the Work.

a) Updated list of tools being provided on board.
b) Maintenance and inspection reports for all tools.
c) Updated tool inventory.
d) Complete file of detailed manifests of equipment sent to and from the Drilling Unit.
e) Providing job running records, recommendations, tool failure reports and any other reports as reasonably requested.
f) A daily and weekly summary of tools used in the operation.
g) Fishing and Abandonment tool running procedures.
h) Dimensioned drawings of all Fishing and Abandonment tool BHAs.
i) Summary of all operations with their tools.
j) Summary of any equipment failures.
k) A list of accessories that must be replaced after use due to wear or loss (e.g., grapples, packers, cutter blades).
l) A monthly report of the inventory and consumable consumption.

6.2 Tools & Equipment Inventory

Contractor shall maintain an up-to-date inventory of all tools and equipment held on the Drilling Unit, Shore Base, workboats or elsewhere. This report shall be submitted on a monthly basis to the Company Representative. Contractor is responsible to ensure that tools are picked up, made-up, and laid down according to the Contractor's Operating Guidelines and Procedures, which shall be approved by the Company prior to the commencement of operations.

6.3 End of Well Report

Contractor shall provide the following end of well reports within 14 days of the end of each well for each of the services provided as applicable:

a) A detailed recap of each job, including time breakdown.
b) A recap of any problems and equipment failures during running of fishing tools along with recommendations on how to prevent them.
c) A detailed cost breakdown by section for all the tools and equipment provided.
d) A summary of all operations with their tools.
e) A lessons Learned Document with any recommendation to improve and optimize future jobs.
f) A final list of accessories that must be replaced due to wear or loss (e.g., grapples, packers, cutter blades, slip inserts).
g) A mobilisation plan for any tools that must be replaced including shipping time, cost, and importation plan.
h) A demobilization plan at the end of the project showing destination for all the tools, estimated shipping time and export plan.

6.4 Sample Reports

Contractor's outline example reports of those reports required as above should be attached. The final reporting format will be agreed upon with the Company prior to the commencement of work.

7.0 EQUIPMENT

7.1 Additional Equipment:

The Contractor's entire list of Fishing Equipment and tools (Contractor's standard price table with applicable discounts) should be listed. Contractor shall maintain adequate stocks of consumables and accessories to manage the operation of the Work in a remote location.

7.2 Maintenance:

Upon request by Company, Contractor shall provide proof of maintenance and service history of all items of equipment supplied.

7.3 Equipment to be Operational:

Contractor shall maintain all equipment in such operating condition to prevent downtime or waiting on equipment during operation. Contractor shall supply all relevant certification requested by Company. All spares required for the service of the equipment and tools shall be provided by the Contractor.

8.0 Inspection

Contractor acknowledges that Company may inspect Contractor's Equipment using a third-party inspection company as per Clause No: 8.0 of SCC and at any time during the duration of the contract. Contractor shall mobilize Contractor's Equipment to Company's Shore Base at Kakinada as directed by Company to allow inspection to be carried out. Contractor acknowledges that Company may require random API testing of any/all tools by an independent third-party, at their cost. Alternatively, if instructed, the Contractor shall supply the tools inspected, at their cost, prior to mobilizing the same to the Company's Shore Base, however in such case the Contractor will have to provide third party inspection certificates prior to the shipment.

9.0 Company's Standards

Company's standards for drilling tools and other related equipment are DS-1 Category 4. Contractor shall submit the inspection reports based on DS-1 Category 4 standards, prior to the mobilisation.

10.0 LOGISTICS

10.1 Shore Base

Contractor is required to mobilise all its equipment to either the drilling location or the Contractor's Shore Base at Kakinada. All the equipment supplied by the Contractor to the Company under the contract, shall be stored in Contractor's facilities at Kakinada and shall be delivered to Shore Base at Kakinada as per operational requirement and when instructed by the Company. Contractor will transport the equipment from Shore Base at Kakinada to the Drilling Unit and vice-versa by Marine Vessels.

10.2 Load Testing

All lifting and load bearing equipment of the Contractor shall be certified prior to use and all relevant certifications shall be available for inspection. All toolboxes and containers must be sent with certified slings and a copy of the certification should be sent with the equipment. The slings should be clearly identifiable as belonging to the Contractor.

TABLE-A LIST OF FISHING TOOLS (FOR 2 RIGS OPERATION)

Item	Description of Equipment	Qty
A	**8¼" Spear with Bull Nose**	
1	8 1/4" OD Bowen/ ITCO releasing spear with 6 5/8" Reg Box X 4 1/2" IF Pin Conn C/W protectors	1
A1	**20" 0.625" WT, 133 lbs/ft Casing**	
1	Segment Grapple	1
2	Spear Pack-off with 4 1/2" IF Box X 4 1/2" IF Pin Conn C/W protector installed with rubber cup and Conn C/W protector installed with rubber cup and spear pack off and cross over sub	1
3	Stop Sub with 6 5/8" Reg Box X Pin Conn C/W	1
	protector with 21" OD welded stop ring	
A2	**16" 84 lbs/ft Casing**	
1	Segment grapple	1
2	Spear Pack-Off Assy with 4 1/2" If Box X Bullnose C/W protector installed with rubber cap and spear pack off and cross over sub	1
3	Stop Sub with 6 5/8" Reg Box X Pin Conn C/W protector with 17" OD welded stop ring	1
A3	**13 3/8" 72 lbs/ft/13-5/8" 88.2 lbs/ft Casing**	

1	Segment grapple	1
2	Spear Pack-Off Assy with 4 1/2" If Box X Bullnose C/W protector installed with rubber cap and spear pack off and cross over sub	1
3	Stop Sub with 6 5/8" Reg Box X Pin Conn C/W protector with 14 3/8" OD welded stop ring	1
A4	**9-5/8" 47 lbs/ft/9-7/8" 62.8 lbs/ft Casing**	
1	Segment grapple	1
2	Spear Pack-Off Assy with 4 1/2" If Box X Bullnose C/W protector installed with rubber cap and spear pack off and cross over sub	1
3	Stop Sub with 6 5/8" Reg Box X Pin Conn C/W protector with 10 5/8" OD welded stop ring	1
A5	**5 3/4" Spear (for 7" Casing - 32 lbs/ft) with Bull Nose**	
1	5 3/4" Bowen/ ITCO releasing spear with 3 1/2" IF Box X Pin Conn C/W protector installed with rubber cap and spear pack off and cross over sub	1
2	Spear Pack-off Assy with 3 1/2" IF Box X Bullnose installed with rubber cup and	1
3	Stop Sub with 3 1/2" IF Box X Pin Conn C/W protector with 8 1/4" OD welded stop ring	1
A6	**3-1/2" Spear (for 4-1/2" Casing – 15.1 lbs/ft) with Bull Nose**	
1	3-1/2" Bowen/ ITCO releasing spear with 2-3/8" IF Box X Pin Conn C/W protector installed with rubber cap and spear pack off and cross over sub	1
2	Spear Pack-off Assy with 2-3/8" IF Box X Bullnose installed with rubber cup and	1
3	Stop Sub with 2-3/8" IF Box X Pin Conn C/W protector with 4-1/2" OD welded stop ring	1
A7	**36" Casing Spear**	
1	36" Casing Spear, D/W 36" CSG Segment Grapple – 6 5/8" Reg Conn	1
	Other Equipment	
B	**11 3/4" FS Overshot**	
1	11 3/4" OD Bowen FS S150 Overshot with 6 5/8" Reg Box Conn C/W protector	1
B1	**Extension**	
1	11 3/4" OD Bowen FS 36" Overshot Extension	1

B2	**Wall hook guide**	
1	11 3/4" OD FS Overshot 26" Wall Hook Guide	1
B3	**Lip Guides**	
1	15" OD Oversize Guide for 11 3/4" OD FS S150 overshot	1
2	11-3/4" OD Standard Guide for 11 3/4" OD Bowen Series 150 FS overshot	1
3	13" OD Oversize Guide for 11 3/4" OD Bowen Series 150 FS overshot	1
B4	**Spiral Grapple**	
1	9 7/8" Spiral Grapple C/W type "A" Packer	1
2	9 3/4" Spiral Grapple C/W type "A" Packer	1
3	9 5/8" Spiral Grapple C/W type "A" Packer	1
4	9 1/2" Spiral Grapple C/W type "A" Packer	1
5	Spiral Grapple Control	2
B5	**Basket Grapple**	
1	9 3/8" Basket Grapple C/W Mill Control Packer	1
2	9 5/8" Basket Grapple C/W Mill Control Packer	1
3	8 1/2" Basket Grapple C/W Mill Control Packer	1
4	8 1/4" Basket Grapple C/W Mill Control Packer	1
5	8 3/8" Basket Grapple C/W Mill Control Packer	1
6	8 1/8" Basket Grapple C/W Mill Control Packer	1
7	8" Basket Grapple C/W Mill Control Packer	1
8	7 7/8" Basket Grapple C/W Mill Control Packer	1
9	7 3/4" Basket Grapple C/W Mill Control Packer	1
10	7 5/8" Basket Grapple C/W Mill Control Packer	1
11	7 1/2" Basket Grapple C/W Mill Control Packer	1
12	7" Basket Grapple C/W Mill Control Packer	1
13	6 7/8" Basket Grapple C/W Mill Control Packer	1
14	6 3/4" Basket Grapple C/W Mill Control Packer	1
15	6 5/8" Basket Grapple C/W Mill Control Packer	1
16	6 1/2" Basket Grapple C/W Mill Control Packer	1
17	6 3/8" Basket Grapple C/W Mill Control Packer	1
18	6 1/4" Basket Grapple C/W Mill Control Packer	1
19	6 1/8" Basket Grapple C/W Mill Control Packer	1
20	6" Basket Grapple C/W Mill Control Packer	1
21	5 7/8" Basket Grapple C/W Mill Control Packer	1
22	5 3/4" Basket Grapple C/W Mill Control Packer	1
23	5 1/2" Basket Grapple C/W Mill Control Packer	1
24	5 3/8" Basket Grapple C/W Mill Control Packer	1
25	5" Basket Grapple C/W Mill Control Packer	1
26	4 3/4" Basket Grapple C/W Mill Control Packer	1
27	2 7/8" Basket Grapple C/W Mill Control Packer	1

B6	**Basket Grapple Control**	
1	Basket Grapple Control	2
C	**8 1/8" FS Overshot**	
1	8 1/8" FS S150 Bowen Overshot with 4 1/2" IF Box Conn C/W protector	1
C1	**Extension**	
1	8 1/8" OD FS 36" Overshot Extension	1
C2	**Wall hook Guide**	
1	8 1/8" OD FS 36" Overshot Wall hook Guide	1
C3	**Lip Guides**	
1	Standard Guide for 8-1/8” FS Overshot	1
2	11 1/2" OD Oversize Guide for 8 1/8" OD F S	1
3	15" OD Oversize Guide for 8 1/8" OD FS Overshot	1
C4	**Spiral Grapples**	
1	6 1/2" Spiral Grapple C/W type "A" Packer	1
2	6 3/8" Spiral Grapple C/W type "A" Packer	1
3	6 1/4" Spiral Grapple C/W type "A" Packer	1
4	6 1/8" Spiral Grapple C/W type "A" Packer	1
5	6" Spiral Grapple C/W type "A" Packer	1
6	5 7/8" Spiral Grapple C/W type "A" Packer	1
7	Spiral Grapple Control	2
C5	**Basket Grapple**	
1	5 3/4" Basket Grapple	1
2	5 1/2" Basket Grapple C/W Mill Control Packer	1
3	5 3/8" Basket Grapple C/W Mill Control Packer	1
4	5 1/4" Basket Grapple C/W Mill Control Packer	1
5	5" Basket Grapple C/W Mill Control Packer	1
6	4 7/8" Basket Grapple C/W Mill Control Packer	1
7	4 3/4" Basket Grapple C/W Mill Control Packer	1
8	4 5/8" Basket Grapple C/W Mill Control Packer	1
9	4 1/2" Basket Grapple C/W Mill Control Packer	1
10	4 1/4" Basket Grapple C/W Mill Control Packer	1
11	4 3/8" Basket Grapple C/W Mill Control Packer	1
12	3 1/2" Basket Grapple C/W Mill Control Packer	1
13	3 3/8" Basket Grapple C/W Mill Control Packer	1
14	2 7/8" Basket Grapple C/W Mill Control Packer	1
C6	**Basket Grapple Control**	
1	Basket Grapple Control	2
D	**8 1/8" SH Overshot**	
1	8 1/8" OD SH S150 Overshot with 4 1/2" IF Box Conn C/W protector	1

D1	**Extensions**	
1	8 1/8" OD SH Overshot Extension	1
D2	**Lip Guides**	
1	Standard Guide for 8 1/8" OD SH Overshot	1
D3	**Spiral Grapple**	
1	7" Spiral Grapple C/W type "A" Packer & Spiral	1
2	6 7/8" Spiral Grapple C/W type "A" Packer	1
3	6 3/4" Spiral Grapple C/W type "A" Packer	1
4	6 5/8" Spiral Grapple C/W type "A" Packer	1
5	6 1/2" Spiral Grapple C/W type "A" Packer	1
6	Spiral Grapple Control	2
D4	**Basket Grapples**	
1	6 3/8" Basket Grapple with Mill Control Packers	1
2	6 1/4" Basket Grapple with Mill Control Packers	1
3	6" Basket Grapple with Mill Control Packers	1
4	5 7/8" Basket Grapple with Mill Control Packers	1
D5	**Basket Grapple Control**	
1	Basket Grapple Control	1
E	**5 7/8" SH Overshot**	
1	5 7/8" OD SH S150 Bowen Overshot with Standard Guide with 3 1/2" IF Box Conn C/W protector	1
E1	**Extensions**	
1	5 7/8" OD SH Overshot Extension 36" Long	1
E2	**Guides**	
1	Standard Guide for 5-7/8" OD SH Overshot	1
E3	**Spiral Grapple**	
1	5" Spiral Grapple C/W type "A" Packer	1
2	4 7/8" Spiral Grapple C/W type "A" Packer	1
3	Spiral Grapple Control	2
F	**5-3/4" FS Overshot**	
1	5 3/4" OD FS S150 Bowen Overshot with 3 1/2" IF Box Conn C/W protector	1
F1	**Extension**	
1	5 3/4" OD FS Overshot Extension	1
F2	**Lip Guides**	
1	5 3/4" OD Standard Guide for 5 3/4" OD FS Overshot	1

2	8" OD Oversize Guide for 5 3/4" OD FS Overshot	1
F3	**Spiral Grapple**	
1	4 3/4" Spiral Grapple C/W type "A" Packer	1
2	4 5/8" Spiral Grapple C/W type "A" Packer	1
3	4 1/2" Spiral Grapple C/W type "A" Packer	1
4	4 3/8" Spiral Grapple C/W type "A" Packer	1
5	Spiral Grapple Control	2
F4	**Basket Grapple**	
1	4 1/4" Basket Grapple C/W Mill Control Packer	1
2	3 1/2" Basket Grapple C/W Mill Control Packer	1
3	2 7/8" Basket Grapple C/W Mill Control Packer	1
F5	**Basket Grapple Control**	
1	Basket Grapple Control	2
G	**Reverse Circulation Junk Basket (RCJB)**	
1	15" OD Bowen RCJB C/W Mill Shoe with 6 5/8" Reg Box C/W Lift Bail & Steel Ball	1
2	11" OD Bowen RCJB C/W Mill Shoe with 6 5/8" Reg Box C/W Lift Bail & Steel Ball	1
3	7 7/8" OD Bowen RCJB C/W Mill Shoe with 4 1/2" IF Box C/W Lift Bail & Steel Ball	1
4	5 1/8" OD Bowen RCJB C/W Mill Shoe with 3 1/2" IF Box C/W Lift Bail & Steel Ball	1
H	**Bumper Sub**	
1	7 3/4" Bowen Fishing Bumper Sub with 6 5/8" Reg Box X Pin Conn C/W protector	1
2	6 1/2" OD Standard Fishing Bumper Sub c/w 4-1/2" IF Conn	1
3	6 1/4" OD Bowen Lubricating Fishing Bumper	1
	SUB with 4 1/2" IF Box X Pin Conn C/W protector	
4	4 3/4" OD Bowen Fishing Bumper Sub with 3 1/2" IF Box X Pin Conn C/W protector	1
I	**Ditch Magnet**	
1	Ditch Magnet	2
J	**Safety Joint**	
1	8" OD Drill pipe Safety Joint with 6 5/8" Reg Box X Pin Conn C/W protector	1
2	6 1/2" OD Drill pipe Safety Joint with 4 1/2" IF Box X Pin Conn C/W protector	1
3	4 3/4" OD Drill pipe Safety Joint with 3½" IF Box X Pin Conn C/W protector	1
K	**Flat Bottom Junk Mill**	
1	17" OD Flat Bottom Junk Mill with 6 5/8" Reg Pin UP Conn C/W protector	2
2	12 1/8" Flat Bottom Junk Mill with 6 5/8" Reg Pin UP Conn C/W protector	2
3	8 1/4" OD Flat Bottom Junk Mill with 4 1/2" Reg Pin UP Conn C/W protector	2
4	5 3/4" OD Flat Bottom Junk Mill with 3 1/2" Reg Pin UP Conn C/W protector	1

L	**Tapered Mill**	
1	17" OD Tapered Mil with 6 5/8" Reg Pin UP Conn C/W protector	1
2	12" OD Tapered Mil with 6 5/8" Reg Pin UP Conn C/W protector	1
3	8 1/4" OD Tapered Mil with 4 1/2" Reg Pin UP Conn C/W protector	1
4	5 3/4" OD Tapered Mil with 3 1/2" Reg Pin UP Conn C/W protector	1
M	**Fishing Magnet**	
1	16" OD Bowen Fishing Magnet with 7 5/8" Reg Pin UP Conn C/W protector	1
2	11 1/2" OD Bowen Fishing Magnet with 6 5/8" Reg PIN UP Conn C/W protector	1
3	7" OD Bowen Fishing Magnet with 4 1/2" Reg Pin UP Conn C/W protector	1
4	5" OD Bowen Fishing Magnet with 3 1/2" Reg Pin UP Conn C/W protector	1
N	**10 3/4" Wash pipe (call out Basis)**	
1	10 3/4" OD Wash pipe with 10 3/4" 51 lbs/ft FJWP Box X Pin Conn C/W protectors	4
2	10 3/4" OD 51lbs/ft FJWP Lifting Plug	2
3	Drive Sub with 4 1/2" IF Box X 10 3/4" 51lbs/ft FJWP PIN Conn C/W protector	1
4	12" OD X 9 1/2" ID Rotary Shoe with 10 3/4" 51lbs/ft FJWP Box Conn C/W protectors	3
5	10 3/4" OD X 10FT Long Wash pipe Extension with 10 3/4" 51lbs/ft FJWP Conn C/W protector	1
6	10 3/4" OD X 15FT Long Wash pipe Extension with 10 3/4" 51lbs/ft FJWP Conn C/W protector	1
N.1	**Handling tools for 10 3/4" Wash pipe (call out basis)**	
1	10 3/4" Elevator	1
2	10 3/4" Single Joint Elevator	1
3	Type C-7 Slip dressed with Liner	1
	To Hold 6 3/4" - 8 1/4" OD Wash pipe (12 Segment)	
O	**7 5/8" Wash pipe (call out basis)**	
1	7 5/8" OD Wash pipe with 7 5/8" 29 70lbs/ft FJWP Box X Pin Conn C/W protectors	4
2	7 5/8" 29 70lbs/ft FJWP Lifting Plug	3
3	7 5/8" OD X 10FT Long Wash pipe Extension with7 5/8" 29 70lbs/ft FJWP Conn C/W protector	1
4	7 5/8" OD X 15FT Long Wash pipe Extension with7 5/8" 29 70lbs/ft FJWP Conn C/W protector	1
5	Drive Sub with 4 1/2" IF Box X 7 5/8" 29 70lbs/ft FJWP Pin Conn C/W protector	1
6	8 1/2" OD X 6 15/16" ID Rotary shoe with7 5/8" 29 70lbs/ft FJWP Box Conn C/W protectors	2
7	8 1/2" X 6 5/8" ID Rotary Shoe with 7 5/8" 29 70lbs/ft FJWP Box Conn C/W protectors	2

8	Triple connection sub with 4 ½" IF box x 7 5/8" 29 lbs/ft FJWP pin x 4 ½" Reg box conn c/w protectors	1
O.1	**Handling tools for 7 5/8" Wash-pipe (call out basis)**	
1	7 5/8" Elevator	1
2	7 5/8" Single Joint Elevator	1
3	Type C-7 Slip dressed with Liner to hold 10 - 11 1/4" OD Wash pipe (17 Segment)	1
4	Safety Clamp - 10 3/4"-7 5/8"	1
P	**Impression Block**	
1	17" OD Lead Impression Block with 6 5/8" Reg Pin UP Conn C/W protector	1
2	16" OD Lead Impression Block with 6 5/8" Reg Pin UP Conn C/W protector	1
3	14" OD Lead Impression Block with 6 5/8" Reg Pin UP Conn C/W protector	1
4	11" OD Lead Impression Block with 6 5/8" Reg Pin UP Conn C/W protector	1
5	11 3/4" OD Lead Impression Block with 6 5/8" Reg Pin UP Conn C/W protector	1
6	8 1/2" OD Lead Impression Block with 4 1/2" Reg Pin UP Conn C/W protector	1
7	8" OD Lead Impression Block with 4 1/2" Reg Pin UP Conn C/W protector	1
8	5 1/2" OD Lead Impression Block with 3 1/2" Reg Pin UP Conn C/W protector	1
9	5 3/4" OD Lead Impression Block with 3 1/2" Reg Pin UP Conn C/W protector	1
10	6" or 5 7/8" OD Lead Impression Block with 2 3/8" Reg Pin UP Conn C/W protector	1
Q	**Taper Tap**	
1	Taper Tap with 7 3/4" OD C/W 6 5/8" Reg Box Connection Wicker 4-3/4" x 3"	1
2	Taper Tap 6 1/8" OD, Catch Size 3 ¼" – 4 5/8", 4-1/2" IF connection	1
3	4 ¾" OD Taper Tap C/W NC38 connection Wicker 2-3/16" – 3-11/16"	1
4	Taper Tap with 3 1/4" - 5 3/4" Wicker size with 6-5/8" Reg Box Conn C/W protector	1
5	Taper Tap with 1 1/4" - 4 1/8" Wicker size with 4-1/2" IF Box Conn C/W protector	1
R	**Fishing Jar**	
1	7 ¾" OD Bowen Fishing Jar with 6 5/8" Reg Box x pin conn c/w protector	1
2	6 1/2" OD Bowen Fishing Jar with 4 1/2" IF Box x pin conn C/W protector	1
3	4 ¾" OD Bowen Fishing Jar with 3 1/2" IF Box x pin conn c/w protector	1
R	**Other Equipment**	
R.1	**Eliminator Section Mill (call out basis)**	
1	8" Eliminator Section Mill C/W 4½" Reg Conn	1
2	Knives for 8" Eliminator Mill to cut 9 5/8" Casing	1
3	Friction Blocks for 8" Eliminator Mill	1
4	6½" Griffith shock tools W/4½" IF Pin X Box Conn	1
5	6½" OD Nonrotating Stabilizer with 4½" IF Pin X Box Conn. C/W 8½" OD Sleeve	1

6	Bit sub – 3 ½" IF box x 3 ½" Reg box	1
R.2	**Mechanical Trip saver type Whipstock for inside 9 5/8" Casing (on call out basis)**	
1	8" Mechanical Trip saver type Whipstock for inside 9 5/8" Casing	1
2	8½" OD CPE Window Mill with 4½" Reg Pin Conn	1
3	8½" OD Spacer Mill rough OD with 4½" Reg Pin Conn	1
4	7¼" OD Stabiliser Sub with 4½" Reg Pin Conn	1
5	Shear Screws	1
6	Bit Sub - 4½" IF Box X 4½" Reg Box	1
S	**Casing Patches – External Only (call out basis)**	
1	13 3/8" casing patch	1
2	13 3/8" casing dressing Mill w/ 6 5/8" Reg Pin	1
3	9 5/8" casing patch	1
4	9 5/8" casing dressing Mill w/ 4 1/2" Reg Pin	1
T	**Mills**	
1	12" Crippled mill shoe	1
2	12" Wavy mill shoe	1
3	8 1/8" Crippled mill shoe	1
4	8 1/8" Wavy mill shoe	1
U	**Oil Jar**	
1	7 3/4" OD Bowen type "Z" Oil Jar with 6 5/8" Reg Box X Pin Conn C/W protector	1
2	6 1/4" OD Bowen type "Z" Oil Jar with 4 1/2" IF Box X Pin Conn C/W protector	1
3	4 3/4" OD Bowen type "Z" Oil Jar with 3 1/2" IF Box X Pin Conn C/W protector	1
V	**Jar Intensifier**	
1	7 3/4" OD Bowen Jar Intensifier with 6 5/8" Reg Box X Pin Conn C/W protector	1
2	6 1/2" OD Bowen Jar Intensifier with 4 1/2" IF Box X Pin Conn C/W protector	1
3	6 1/4" OD Bowen Jar Intensifier with 4 1/2" IF Box X Pin Conn C/W protector	1
4	4 3/4" OD Bowen Jar Intensifier with 3 1/2" IF Box X Pin Conn C/W protector	1
W	**Junk Sub**	
1	15" OD Junk Sub c/w 7 5/8" Regular Pin x Box	1
2	13 3/8" OD Junk Sub c/w 7 5/8" Regular Pin x Box	1
3	9 5/8" OD Junk Sub c/w 6 5/8" Regular Pin x Box	1
4	7" OD Junk Sub c/w 4 1/2" Regular Connection	1
5	5" OD Junk Sub c/w 3-1/2" IF Pin x Box	1
X	**Surface Bumper Jars**	
1	7" OD Bowen Surface Bumper Jar with 4-1/2" IF Box x Pin conn c/w protector	1
Y	**Cargo Baskets and Boxes**	

1	Cargo Baskets and Boxes to store & transport Fishing tools, Grapples etc.	Lot
Fishing Tools required for 5-7/8" Hole & 4-1/2" casing on optional basis		
S. No.	**Description of Equipment**	**Qty**
A1	**3-1/4" Spear for 4-1/2" 15.1 lb/ft casing**	
1	3-1/4" Bowen / ITCO releasing spear with 2-7/8" box x pin conn c/w protector installed with 4-1/2", 15.1 lb/ft spear grapple, spear pack off and cross over sub	1
B1	**Flat Bottom Junk Mills**	
1	3-1/4" OD Flat Bottom Junk Mill with 2-3/8" pin up conn c/w protector	1
C1	**Tapered Mills**	
1	3-1/4" Tapered Mill with 2-3/8" Reg pin up c/w protector	1
D1	**Fishing Magnets**	
1	3" OD Bowen Fishing Magnet with 2-3/8" Reg Pin up connection suitable to run inside 4-1/2" 15.1 ppf casing C/W protectors	1
E1	**Taper Tap**	
1	Taper tap suitable for 3-1/2" DP & 2-7/8" PAC Drill Pipes	1
F1	**Fishing Jar**	
1	3-1/8" OD Bowen Jar with 2-3/8" API Reg Connection	1
G1	**Reverse Circulation Junk Basket (RCJB)**	
1	5-1/8" OD Bowen Reverse Circulating Junk Basket c/w 3-1/2" IF Box connection – w/5-7/8" OD c/w Milling ahead and catcher	1
H1	**Cargo Baskets and Boxes (for Optional tools)**	
1	Cargo Baskets and Boxes to store & transport Fishing Tools, Grapples etc.	1
I1	**Over-shots** for Tubing (Full Strength / Slim Hole with Basket and Spiral Grapple – Catch Size: 2-3/8", 2-7/8", 3-1/2" and 4-1/2" tubing with Top Sub, Extension Sub, Guide and Oversized Guide	1 for each size

Exhibit 13

13. WIRELINE LOGGING & PERFORATION SERVICES

The Successful Bidder shall provide Wireline Logging Unit and services along with required manpower, equipment, and software in full operating condition suitable to work in Mahanadi and Krishna Godavari offshore blocks having water depths ranging of 500 to 3000m. The Bidder shall provide one skid mounted Wireline Logging Unit and services along with required manpower, surface equipment, wireline logging tools and data processing service in full operating condition suitable to be deployed at Development drilling sites in offshore environments on Drillships. Bidder will, as a minimum, adhere to the latest international standards and standard operating procedures.

Wireline services are planned to be hired for two sets of Logging skid units with standard tools and one set of special and optional tools (if any) that can be used with any logging skid unit as and when required. Skid unit should be able to log up to a depth of minimum 7500m. Expected Maximum temperature of the well is about 153°C and pressure is about 18000 psi. Drilling below 20" casing will be carried out using Synthetic Drilling Fluid / Oil-Based Mud (OBM). All the logging tools and equipment must be able to log and perforate the wells in above mentioned conditions.

1. SERVICE PROVIDER'S EXPERIENCE

The Bidder should have a minimum of five (05) years of experience in providing Wire Line Logging services to Drilling/E&P Companies with at least three (03) years in offshore areas.

The Bidder should also have the experience in providing Wire Line Logging services to at least 2 deep water Wells (water depth ≥ 500Mtr) and should have executed at least one contract for Wire Line Logging services in offshore area in the last 07 years reckoned from original bid closing date.

2. SERVICE PROVIDER'S PERSONNEL

Contractors shall deploy the engineers along with support crew. Wireline Logging crew shall comprise of the following:

i. **Engineer(s).**
ii. **Crew** to assist the Engineer(s) as Required (No. of personnel along with their position to be mentioned by the Contractor).
iii. **Specialists** for special logging operations such as formation testing, VSP etc.

In addition to above field personnel, contractor must identify a Base Co-Ordinator who will be in touch with OIL's operating office for planning and seamless execution of the wireline logging operations in the field.

Contractor must comply with following requirements related to logging personnel:

1. Biodata of the Base Co-ordinator, Logging Engineer, specialists, Data processing personnel and the Crew personnel must be submitted to OIL at the time of bidding in their Unpriced Techno-Commercial bid as well as before mobilization as per Annexure-B. It also applies to the additional personnel which the Contractor may decide to keep in the operational areas. The personnel should have fulfilled the requisite experience as on or before the original bid closing date. Company reserves the right to accept or reject the Contractor's proposed personnel.
2. Documentary evidence, identity cards etc. shall be submitted by the Contractor in support of the biodata against which Company's representative will certify completeness of mobilisation of the Contractor for start of operations.
3. At least one engineer should be fluent in written and spoken English.
4. The logging engineers and support crew must have necessary qualification, training, and experience to operate all the offered logging tools and deploy them on the rig for performing the operations with the logging unit.
5. Contractor's personnel shall be competent to service, repair & maintain Contractor's Equipment in good operational condition at any time throughout the duration of the Contract.
6. The Contractor shall ensure that all employees of the Contractor comply with applicable laws of the Country including immigration laws and where required are in possession of the valid work permit for the duration of the Contract. Details of such work permits shall be submitted to the Company, prior to the employee being engaged in the work.
7. Contractor shall indicate in advance additional personnel, if any, required to be deployed for occasions like special or extended logging runs etc.

i. Should a specialist be required for a particular work, the Contractor shall discuss with Company and give advance notice to Company.

ii. Contractor shall indicate in its Unpriced Techno-Commercial bid which operations require the services of such a specialist. Also indicate the base from where the specialist will be mobilised.

2.1 Experience of Contractors personnel:

The personnel provided for carrying out wireline logging, perforation and other associated operations under the Contract must be qualified, competent and experienced as mentioned below. Period in this regard shall be reckoned from original bid closing date.

a) **Base Co-ordinator:** The Base Co-ordinator shall have minimum 5 (five) years of relevant experience of carrying out wireline logging and perforation and related services, with minimum one year experience of co-ordinating & managing wireline logging and perforation-related services.

b) **Logging Engineer:** The Logging Engineers deployed shall have minimum 3 (three) years of relevant experience of carrying out wireline logging and perforation and related services. Deployed logging engineers must be able to handle independent assignments and must have logged at least 10 wells including 3 offshore wells in an independent capacity in earlier assignments on the bid closing date. Apart from requisite experience and Logging engineers should have valid well control and offshore safety course certifications.

c) **Logging Operator:** The Logging Operators deployed should have at least 1 (One) year of relevant experience of carrying out wireline logging and perforation and related services. Deployed logging operators must be able to handle independent assignments and must have logged at least 5 wells including 1 offshore well in an independent capacity in earlier assignments on the bid closing date. Apart from requisite experience and Logging operators should have valid offshore safety course certifications.

d) **Data processing personnel:** The Data Processing Geoscientists / Engineers must have minimum 4 (four) years' experience in processing and interpretation of wireline log data, as mentioned in SOW.

2.2 **Replacement of Contractor Personnel:**

a) Contractors must not change their key personnel (Logging Engineer/ Service coordinator) deployed during mobilization for the entire period of the Contract except due to sickness/death/resignation or any other justified situation in which case the replaced person should have the requisite experience and qualification, which will be again subject to prior approval, by the Company.

b) For replacement of key personnel (Logging engineer(s)/ Service coordinator) in above cases, the Contractor shall submit the biodata of the new personnel for approval by Company prior to deployment. The replacement personnel should fulfil the requisite experience and qualification criteria on the date of application for replacement.

c) Company shall have the right to remove from work and/or replace any Contractor personnel who in the opinion of the Company has been negligent in the performance of the duties and responsibilities resulting in loss to company, and/or violates Company's HSE policy, and/or misconducts in a manner considered undesirable and/or performance is found to be poor. In such event, the Contractor shall forthwith remove such persons from work and replace with qualified and experience personnel at sole expense of the Contractor.

3. WIRELINE LOGGING SERVICES:

The requirements of Offshore Skid- mounted Logging Unit along with services required are categorized as follows:

a) Offshore Skid- mounted Logging Unit (with standard + Special tools) as described in Table-1 of this section.
b) Data processing services as described in Table-2 of this section.

Standard Services: These services are those which shall be mobilized by default along with the mobilization of the Logging Unit. They will remain hired for the entire hiring duration of the respective Logging Unit. Such services are listed in sub-heading A of **Table-1** below.

Special Services: These services shall be mobilized and hired for duration as per OIL's requirement. Once mobilized, these services shall be hired for a minimum period of 30 Days. Some of the special services may be mobilized along with Logging Unit during initial

mobilization which shall be mentioned in the LOA. Special services are listed in sub-heading B of **Table-1** below.

List of services/tools required with corresponding OIL's service code (a reference code defined for each equipment/service); total quantity of each tool/equipment required is given in **Table-1** below:

A. TABLE–1: LIST OF REQUIRED WIRELINE SERVICES AND TOOL

Sl. No.	OIL's Code	Service Description	Quantity to be mobilized
A. Standard Tools /Services:			
1.	TR-1	Offshore Skid- mounted Logging Unit	2
2.	TR-2	Line Packoff (For pressurized CBL Job)	2
3.	TR-3	Pressure Control Equipment for Tubing Operations	2
4.	TR-4	Logging While Fishing	2
5.	TR-5	Data transmission	2
6.	CR-1	Personnel/Crew	2
7.	CIS	Customer Instrument Service	2
8.	S-8	High Resolution Array Induction Resistivity with SP	2
9.	A-2	Dual Spaced Compensated Neutron Porosity	2
10.	A-3	Formation Density (with Pe & caliper)	2
11.	A-4	Natural Gamma ray	2
12.	A-5	Spectral Gamma ray	2
13.	A-6	Side Wall Core	2
14.	A-7	Borehole deviation survey	2
15.	A-8	Cement Bond Evaluation	2
16.	S-12	Dipole Shear Sonic Imager	2
17.	A-10	Pipe Conveyed Wireline Logging	2

18.	A-11	Free Point Survey		2
19.	A-12	Back off/String Shot		2
20.	A-13A	Bridge Plug Setting		2
21.	A-13B	Retainer Packer Setting		
22.	A-14	Through Tubing perforation (Deep Penetration charges)	2”-2 ⅛” Spiral, 6 spf	2
			2”-2 ⅛”, Zero phase, 6 spf	2
23.	A-15	Casing Gun Perforation	2 ⅞” or 2 ¾ " Deep Penetration Charge (for 4½" liner)	2
			4½”-4 ⅝” Deep Penetration Charge (for 7-inch Casing)	2
			4½-4 ⅝” Big Hole Charge (for 7-inch Casing)	2
			4½-4 ⅝” Big Hole Charge (for 9-5/8/9-7/8-inch Casing)	2
24.	A-16	Depth Determination (Dummy/GR/CCL/Junk Basket)		2
25.	A-17	Explosive Pipe Cutter	Explosive jet cutter 2 ⅞" Tubing	2
			Explosive jet cutter 3 ½” Tubing	2
			Explosive jet cutter 4-½" Tubing / Casing / Liner	2
			Explosive jet cutter 5 ½" Casing	2
			Explosive jet cutter 7" Casing	2
			Explosive jet cutter 9 ⅝" Casing	2
			Explosive jet cutter 9 ⅞" Casing	2
26.	A-18	Severing/Colliding tool	Severing 2 ⅞” SLH 90 drill pipe	2
			Severing 3-1/2 OD drill pipe	2
			Severing 5” OD drill pipe	2
			Severing 5-1/2” OD drill pipe	2
			Severing 5-7/8” OD drill pipe	2
			Severing 4-3/4” OD drill collar	2

			Severing 6-1/4”/6-1/2”/6-3/4” OD drill collar	2
			Severing 8”/8-1/4” OD drill collar	2
			Severing 9-1/2” OD drill collar	2
27.	A-19	Puncture services (2 ⅞" tbg – 5-7/8" drill pipe)		2
B. Special Tools/services (to mobilize / demobilize as per requirement):				
1.	A-9	Cement Evaluation and Casing Inspection	a) Both Cement Evaluation and Casing Inspection	1
			b) Cement Evaluation only	1
			c) Casing Inspection only	1
2.	S-1	Look-Ahead Vertical Seismic Profiling (VSP)		1
3.	S-2	Nuclear Magnetic Resonance Logging		1
4.	S-3	Micro-electric Imager for Oil Based Mud		1
5.	S-7	Through tubing CBL		
6.	A-1	Dual/Array Laterolog Resistivity with Micro Resistivity and SP		1
7.	S-11	Elemental Capture Spectroscopy		1
8.	S-15	Rotary Side Wall Coring (Non-Explosive)		1
9.	S-16	3D Induction Resistivity		1
10.	S-17	Multi Frequency Dielectric Tool		1
11.	S-18A	STIM SLEEVE for 2 ⅞” or 2 ¾ " Casing Gun		1
12.	S-18B	STIM SLEEVE for 4½-4 ⅝” Casing Gun		1
13.	S-19	Fiber Optic Vertical Seismic Profiling (VSP)		1
14.		Through Drillpipe Slim OH Tools with multiple conveyance modes: a) Induction/Laterolog tool b) Density tool c) Neutron Porosity d) Natural Gamma Ray tool		1

	AD-1	e) Borehole deviation tool f) Dipole shear sonic tool	
15.	AD-4	Cased Hole Formation Resistivity	1
16.	AD-5	Plug/Packer setting for 4½" Casing/liner	1
17.	AD-7	Formation Testing & Sampling Tool for Ultra Low Mobility	1
18.	AD-11	3D Sonic Scanner or Equivalent	1

NOTES ON TABLE - 1:

a. Technical Specifications and details of the required tools, equipment and services are given in Annexure-A. Technical literature/ brochures must be submitted in support of the required features of tools/ equipment.

b. The open hole tools are required for 17-½", 12-¼" and 8-½" hole sizes whereas cased hole tools are required for 13-3/8", 13-⅝", 9-⅝" and 7"casing. Production tubing shall be of size 2-7/8", 2-3/8", 3-½" & 4.1/2". Also, there is a contingency for drilling 5-7/8"-inch hole with 4-½" liner.

c. Gamma Ray log, CCL log, Borehole temperature and Downhole Tension log shall be provided as standard deliverables with all logging services wherever applicable. The cost of GR, CCL and DTD may be included in the operating cost of the services itself and shall not be payable separately. Service provider must have suitable fishing equipment for fishing operation, if any tool may get stuck in the borehole.

d. The following services must be fully combinable with each other so as to enable combo runs in any desired combination: S-8, A-2, A-3, A-4, A-5 & A-7. If it is found that the contractor is not able to take up combo runs due to restrictions in tool combinability of any of the tool(s) then the Contractor shall have to replace such tool(s) immediately so as to meet the above tool combinability requirement. Until suitable replacement is provided meeting the above combinability, all the above tools shall be under zero rental.

e. The package should also include down hole telemetry device, down hole tension device, knuckle joints, in-line centralizers, directional measurement device, down hole Max thermometer, standoffs etc. One tool of each type is expected to form the part of the package.

f. Contractors should ensure safety, technical and legal conformity for all the tools and services and should submit the relevant documents to Company. Company will have the option to witness the equipment / tools before / after the mobilization.

g. During the contract period, if Company feels that any of the Special services is not required any more seeing the applicability of such services, Company may de-hire such services by giving a notice period of 10 days.

h. The Contractor should provide the technical data sheet for all the tools as per the format provided in Technical Specification Sheet "Annexure-A" for inspection/audit purposes, this sheet is required to be filled when the tools are mobilized by the successful Contractor as per Company's requirement.

i. While perforating the wells, wireline logging Contractor should provide required radioactive markers / pip tags for placing in the casing threads or the perforation that can quickly and positively be found with a gamma ray log.

j. Use of RF safe (RED) detonators is mandatory for jobs involving high explosives. Bidders should quote their services accordingly.

k. One set each of Regular Tools/Services are to be deployed at the time of initial mobilisation for supporting operations at 1st Drillship. The second set of Regular Tools/Services are to be deployed at a later date for supporting operations at the 2nd Drillship. One set of Specialised Tools and Services to be mobilised/demobilsed at both rigs as per operational requirements on shared basis.

4. DATA PROCESSING & INTERPRETATION:

a. Basic Log Interpretation: The service provider will be required to carry out detailed processing & Interpretation (probabilistic method viz. ULTRA or ELAN Plus or equivalent) for the Service Codes P-Basic and PS-1(I) cost of which is to be included in the "operating cost per standard job" on standard log data (Gamma ray - Resistivity - porosity - density - sonic log and/or other available data) for quantitative analysis of lithology/ mineralogy, effective & total porosity, permeability, fluid saturation (movable/residual) & fluid type from log data and submit the provisional result within 48 hours from the time the survey is completed/ after handing over the recorded data to Contractor. Final Report for Basic Log interpretation is to be submitted within 72 hrs (soft copy acceptable). Hardcopies and data (in suitable media) of final processed product to be submitted within 7 days. Processed/ interpreted data must be submitted by Bidders representative stationed at OIL's operating Base.

b. Advanced Log Interpretation: The service provider will be required to carry out detailed processing & Interpretation of advanced logs for the Service Codes PS-2, PS-3, PS-4, PS-5, PS-6, PS-10, P-11 & P-12 cost of which is to be included in the "operating cost per standard job" and

submit the provisional result within 72 hours from the time the survey is completed/ after handing over the recorded data to Contractor [Processing PS-3 : Look Ahead VSP (S-1)/S-19 should be completed and real time look ahead report should be submitted within 24 hours]. Final Report for Advanced Log Interpretation is to be submitted within 5 days (soft copy acceptable). Hardcopies and data (in suitable media) of final processed product to be submitted within 7 days. Processed/ interpreted data must be submitted by Bidders representative stationed at OIL's operating Base.

c. For delay in submission of provisional processed data within defined time period, 1% of Operating Charges for each day of delay (of the related delayed logging services) shall be deducted from invoices, up to a maximum of 50% of operating charge, till the same is provided and accepted by OIL.

d. Transfer of raw/ processed data between Contractor's field base and processing/ interpretation center is Contractor's responsibility and Company will not pay any additional charge for it.

e. Details of the data processing facilities at the processing center and its location must be submitted along with the bid.

f. OIL's Geoscientist may from time to time visit Contractor data processing center for input during data processing and knowledge exchange/work association. Company should bear the cost of travel and accommodation for its Geoscientist to Contractors processing center. Contractor has to provide working space and facility to company's Geoscientist at their data processing center free of cost during the period of visit.

g. The requirement of detailed processing of the services is given in Table-2. The processed data should be submitted both in hard copies (two sets) and soft copies (two set). The scale of the hard copies should be as per industry standard. Processed output (digital data) should be of LAS/LIS/DLIS to be submitted in DVD. Soft copy of the reports, figures, processed log etc. should be presented in PDF/Tiff or similar format and should be submitted in DVD

h. In case of processing where second opinion is required for interpretation, the same must be made available by the Contractor from their other bases in India/abroad. Company will not provide equipment (viz. licensed satellite/Electronic media/Landlines etc.) necessary to transmit data to and from its Computer Center. Data transmission will be the responsibility of the Contractor.

i. In order to provide processed / interpreted data within limited time for taking quick decisions, Contractor should have the data processing center for carrying out detailed processing of the

data with a data processing and interpretation engineer / geoscientist. The bid should indicate the site of data processing center. The results of interpretation are to be made available to Company's office. The Contractor would provide necessary facilities/make arrangements for transmitting the acquired data from the rig-site to their interpretation center so that the necessary interpretation results can be provided to Company within prescribed time.

j. The list of data processing services with interpretation reports required is given in Table-2 below.

B **TABLE-2: LIST OF REQUIRED DATA PROCESSING SERVICES**

Sl. No.	OIL's Code	Data acquired by	Post Processed data requirements
1	P-Basic	Basic OH evaluation tools	Basic log Interpretation (probabilistic method viz. ULTRA or ELAN Plus or equivalent) of standard log data (Gamma ray - Resistivity - porosity - density - sonic log and/or other available data) for quantitative analysis of lithology/ mineralogy, effective & total porosity, permeability, fluid saturation (movable/residual) & fluid type from log data acquired by the Contractor or by a third-party including OIL's in-house logging services for OIL's wells originating from any part of the world.
2	PS-1(I)	Dipole shear sonic imager (S-12) /3D Sonic Scanner or Equivalent (AD-11)	**I) Processing of Dipole Shear-Sonic Imager data for evaluation of** i) Compressional, Shear (both X & Y direction) and Stoneley slowness with integrated travel time, Vp/Vs & gas zone detection. ii) Geo-mechanical properties viz. Young, shear and bulk modulus, Poisson's ratio, etc. iii) Evaluation of formation anisotropy around borehole, anisotropy map

			iv) Permeability from Stoneley v) Stoneley fracture identification
3	PS-1(II)	Dipole shear sonic imager (S-12) /3D Sonic Scanner or Equivalent (AD-11)	**II) Borehole stability analysis and prediction of safe mud window.**
4	PS-1(III)	Dipole shear sonic imager (S-12) /3D Sonic Scanner or Equivalent (AD-11)	**III) Geo-Mechanical Modeling** Geo - Mechanical modeling of an area combining shear sonic data with other necessary data viz. Shear sonic data acquired using DSI or equivalent, Resistivity /density/neutron, resistivity image log data and any other available relevant data to guide well planning viz. casing depth, well trajectory, borehole stability analysis and prediction of safe mud window etc. Such analysis may be carried out using data from one or more than one well located in the same structure/area.
5	PS-1(IV)	Dipole shear sonic imager (S-12) /3D Sonic Scanner or Equivalent (AD-11)	**IV) Sand Ingression Analysis** Examination & analysis of potential sanding issues using available data such as well logs (Sonic & density etc.) and core data of study area. Identification of potential cause of sanding in the study area. Recommendation of suitable solutions to control sand production and suitable completion methodology in sand prone formation. Such analysis may be carried out using data from one or more than one well located in the same structure/area.

6	PS-3	Look Ahead Vertical Seismic Profiling (VSP) (S-1) or Fiber Optic Vertical Seismic Profiling (VSP)	Processing of Borehole Seismic Services (VSP) data in open hole & cased hole relevant to acquisition mode with report comprising of: i) Composite Display of Down-going waves, corridor stack (repeating 6-7 times) with check-shot corrected Sonic, Density, Gamma and Formation Tops. This display is to be with respect to SRD (seismic reference datum). ii) Display of original Down-going (i.e., after separation) waves and display of Down-going waves after Deconvolution. iii) Details of velocity filter and Deconvolution parameters as part of processing notes. iv) VSP Velocity Listing Table: The primary use of VSP is for accurate well – to- seismic ties. Seismic sections are always based on the SRD (seismic reference Datum). Therefore, velocity listing table should have a column mentioning SRD so that the average velocity and interval velocity can be seen w.r.t. SRD. v) Time-Depth Curve: The Depth axis should start from SRD level. At right hand side, there should be a color bar indicating the Formation Tops and Thickness. vi) Time-Depth Table: Interval velocity and Average velocity should be mentioned along with TWT. vii) Check shot data. viii) Report on acquisition and processing. **A. Real-Time Processing & Preliminary Interpretation**

			1. Conduct on-site QC processing to assess data quality. 2. Generate real-time velocity updates for time-depth conversion. 3. Provide immediate Look-Ahead prediction reports at each acquisition stage (within 24 hours of each acquisition stage). 4. Identify overpressure zones, faults, and stratigraphic discontinuities. 5. Depth Prediction to give seismic target depth. **B. Post-Acquisition Processing & Final Interpretation** 1. Perform advanced processing, including: o Deconvolution and wavefield separation. o Depth imaging to enhance subsurface resolution. o Inversion techniques to generate acoustic impedance logs below TD. 2. Integrate VSP results with surface seismic, well logs and drilling data. 3. Prepare a final interpretation report with: o Velocity model refinements. o Structural and stratigraphic analysis. o Drilling risk assessment. **C. DELIVERABLES**

			The contractor must provide the following: 1. Real-Time Look-Ahead Reports (within 24 hours of each acquisition stage). 2. Final Processed VSP Data (SEG-Y format) with interpretation. 3. Well Tie Report correlating seismic, VSP, and well logs. 4. Geohazard and Overpressure Assessment Report. 5. Comprehensive Final Report, including: o Methodology and acquisition details. o Processed data and interpretations. o Recommendations for further drilling.
7	PS-2	Cement Evaluation and Pipe Inspection (A-9)	Processing data for Cement Evaluation &/or Pipe Inspection. i) Azimuthal mapping of Casing to cement bond, Micro-annulus. ii) Casing ID/OD for pipe corrosion
8	PS-4	Nuclear Magnetic Resonance (S-2)	Processing of data of Nuclear Magnetic Resonance Logging Services for i. Determination of total and effective porosity, capillary and clay-bound water & free fluid volume, pore size distribution, permeability, ii. Hydrocarbon typing and quantification. iii. Continuous saturation profiling. iv. All answer products relevant to acquisition mode, such as saturation profiling, high resolution

			processing, T1 profiling, fluid characterization & multi-depth magnetic resonance (MR) Output.
9	PS-5	Microelectric Imager (S-3)	Processing of Borehole Imaging data i. Static and dynamic image, image enhancement for structural, sedimentological study. ii. Automatic and manual dip picking. iii. Structural interpretation from dip and image data (Using Interactive Dip Picking) for presence of fault, fracture and other structural features and their nature, borehole breakout pattern and indicated pattern etc. iv. Stratigraphic interpretation: identification of beds, bedding internal structure like cross laminations and depositional environment indicated integrating other basic log data. v. Fracture analysis, aperture evaluation including fracture aperture, fracture density, fracture porosity curves and fracture dips in plots. vi. Texture characterization and heterogeneity analysis.
10	PS-6	Formation Testing & Sampling Tool for Ultra Low Mobility (AD-7)	Processing of Pretest data for i. Identification of fluid pressure gradient, fluid contacts, mobility/permeability, flow regime, viscosity/GOR & bubble point and any other answer product relevant to acquisition mode. ii. Live real-time fluid analysis product and any other answer product relevant to acquisition mode.

11	PS-10	Elemental Capture Spectroscopy (S-11)	Spectrolith Lithology spectra from Elemental Capture Spectroscopy from corrected clay model and dry weights. Determination of Silicon, calcium, Iron, Gadolinium, Titanium, mica feldspar composite and other minerals for accurate clay volume estimation and clay typing.
12	PS-11	3D Induction Resistivity (S-16)	The processing deliverables of a 3D induction resistivity wireline tool typically include raw and quality-controlled tool measurements, followed by corrected resistivity logs with shallow, medium, and deep responses as well as directional components like horizontal and vertical resistivity. Should produce main deliverable is a 3D inverted resistivity model that shows the spatial distribution of formation resistivity around the borehole, including invasion profiles and anisotropy effects. Also generate petrophysical outputs such as water and hydrocarbon saturation, net pay, and formation boundaries. Final deliverables should be provided as digital well logs (LAS/DLIS), 3D grids, and interpretation reports with uncertainty estimates for reservoir analysis.
13	PS-12	Multi Frequency Dielectric Tool (S-17)	Multi Frequency Dielectric wireline deliverables should consist of frequency-dependent complex dielectric permittivity (ε') and conductivity (σ or ε''), processed into continuous depth logs with borehole and environmental corrections. Key derived outputs include water-filled porosity (Φw) from dielectric mixing models, formation water saturation (Sw) independent of Archie assumptions, and flushed-zone saturation (Sxo) for invasion characterization. Advanced deliverables should include radial invasion indicators, dielectric dispersion parameters for fluid discrimination, and integrated petrophysical outputs calibrated with resistivity, density,

			and neutron logs for shaly sand and complex lithology interpretation.

NOTE ON TABLE – 2 LIST OF DATA PROCESSING SERVICES

a. The Table-2 above describes the services for which data processing and interpretation is required. Successful bidders have to carry out processing of data acquired using tools/services against units offered by them.
b. Basic Log Interpretation: The service provider will be required to carry out detailed processing & Interpretation (probabilistic method viz. ULTRA or ELAN Plus or equivalent) for the Service Codes P-Basic and PS-1(I), cost of which is to be included in the "operating cost per standard job" on standard log data, (Gamma ray - Resistivity - porosity - density - sonic log and/or other available data) for quantitative analysis of lithology/ mineralogy, effective & total porosity, permeability, fluid saturation (movable/residual) & fluid type from log data.
c. Advanced Log Interpretation: The service provider will be required to carry out detailed processing & Interpretation of advanced logs for the Service Codes PS2, PS-3, PS-4, PS-5, PS-6, PS-10, PS-11 & PS-12 cost of which is to be included in the "operating cost per standard job".
d. Bidders are required to quote the processing charges for Service Codes PS-1(II), PS-1(III), PS-1(IV) as per the Price Bid Format (Proforma-B and B1).
e. Contractors will be required to have at their Advanced Log Data Processing Centre the capability of processing / interpretation for detailed VSP, imaging, nuclear magnetic resonance etc. services.
f. It will be the responsibility of the Contractor to transmit the data between drill-site, Contractor's computer center and Company's office under the desired turnaround time.
g. While performing interpretation of logs, Contractor's employees shall give Company the benefit of their judgment as to the correct interpretation without any additional cost.
h. Contractors will be required to provide
    1. Open hole and Cased hole evaluation of all the specified tools mentioned in the bid document.
    2. Detailed processing of bore hole-imaging services etc.
    3. Generate synthetic seismograms from open hole sonic and density log data.
    4. Carry out Sonic calibration from well seismic data.

5. Carry out Sonic Waveform Analysis for Delta-T and energy for both compressional and shear waves for mechanical properties, Geo-mechanical analysis including well-bore stability studies.

i. TENTATIVE VOLUME OF DATA PROCESSING JOB

Contractors will be required to process all the data acquired through various services carried out by them. Contractors in their technical bid should provide the details of various processing products available with them considering the required services.

5. OTHER REQUIREMENTS FOR WIRELINE LOGGING SERVICES:

A. Data Acquisition:

a. Software / Hardware for acquisition, display, storage as well as transmission of wireline log data in real-time data from the well site to operator's operating base.
b. Online digital data acquisition and processing.
c. Online display of logs on a video screen and scratch log on paper for depth control/match.
d. Choice of linear and/or logarithmic scales for log display.
e. Logging speed and tension curves must be recorded on all logs.
f. Down-hole tools offered by Bidder must be of recent generation. Down hole tools should have down-hole digitization, wherever applicable.
g. Environmental correction charts for different tools must be provided.
h. A minimum of seventy-five (75) meters of repeat log shall be run for each suite of logs run in hole unless otherwise instructed by Company's well site Geologist / Petro physicist. For Image Logs, the repeat run shall be for twenty (20) meters.

B. Logging Conditions, Tools & Equipment:

a. Facilities for logging deviated wells with deviation up to 50 degrees. Therefore, the logging unit must have all required accessories like flex-sub/ knuckle joints and hole finders etc.
b. Contractor should make their own arrangement of crossovers and hoses required for supply of compressed air required for pressure control system during "live-well cased hole operations".
c. The unit must be capable of carrying out all the operations mentioned in the SOW in vertical/deviated wells up to the well depth mentioned in the technical specifications section. Both sizes of cables (mono and multiconductor) should be at contractor's base to cater to the stipulated well depth. Spare logging cables of both sizes must be available ready to avoid any delay in operations.

d. The required calibration equipment and verifiers for calibrating all the tools/ equipment mobilized against the Contract must be made available at Contractor's operating base where unit is asked to mobilize throughout the Contract period.
e. All radioactive sources, storage and handling tools/equipment must be in accordance with international safety standards and also the AERB's guidelines on safety and security of the radioactive sources.
f. Perforation charges, power charges, detonators, detonating cords and explosive materials to be available in the form of sizes and packing in accordance with IATA rules and standard for air freighting.
g. Contractors must keep the necessary fishing tools/kits for carrying out fishing operations of their all-downhole tools.

C. Side Wall Cores:

a. Sidewall core samples shall be placed in standard glass vase with screw-seal lids, to be provided by the Contractor, properly labelled and handed over to the Company well site Geologist.
b. A sidewall core sample recovery report shall be attached to a 1:200 scale log print of the correlation log used to depth-align the sidewall core gun or rotary coring tool.

D. Fluid Sample:

a. Fluid samples from formation tester tool or production downhole sampling tools shall be packed in approved shipping containers or equivalent.

E. Data Transmission:

Service provider will be responsible for Installation, operation and Maintenance of necessary hardware and software for recording, storage, sharing and transmission of wireline logging data from wellsite to specified Operator Locations in real-time via own/third party satellite and LAN media using industry standard third-party wellsite data transmission systems. The service provider should also have capability of receiving /downloading data at OIL's base while logging. Necessary hardware / software(s) with multiple user ids (minimum 10 nos.) must be provided for remote viewing of wireline logging data in real time at operator's office/remote location with scroll back as well as data downloading facility for historic data.

F. Explosives & Radioactive materials:

a. Contractor shall have its own approved place for storage of radioactive materials. Contractors shall comply with the statutory regulations for handling of radioactive sources, safety, security, storage and transportation of the same.

b. Contractor shall arrange the space for the magazine for the storage of explosives required for the operation as per the local law of India. The Contractor shall be responsible to have his own approved containers for storage and transportation of the explosives. The Company shall provide the supply vessel for the transportation of explosives from OIL Supply Base in India to the rig and vice-versa.

c. Contractor is responsible for safe storage, accounting and proper usage of the above materials. Contractors should also provide monthly reports on inventory, status and usage of explosives to the Company.

d. Contractor shall provide Company with detailed documentation regarding Contractor's proposed radioactive source handling and operational procedures in the event of radioactive sources being lost in the hole. Contractor shall strictly comply with all international and the statutory requirements of India.

e. Contractors shall also follow the applicable laws regarding the importation and use of radioactive material. Contractor must obtain, at its sole cost and expense, all required approvals, licenses and permits with respect thereto, and shall furnish to Company copies of such approvals, licenses and permits. Contractors should provide monthly reports on status and usage of radioactive materials to the Company.

G. Provision for back-up tools & equipment:

The contractor may choose to keep extra tools/equipment as back-up to provide uninterrupted service. The back-up tool(s) used for replacing the regular tool(s) should be same as the tool being replaced or should be of newer/higher version. In case of failure/loss/damage of the regular tool, the back-up tool can replace the regular tool and will be considered as deployed tool until the regular tool is put back in operation. Such tool(s) need to be inspected for acceptance by the company before deployment for any job. However, OIL will not pay any charges for such back-up tools.

H. Calibration requirement

Contractor shall provide

a. All necessary calibration equipment, as per tool calibration procedure, at Contractor's operation base near / within block for all the tools.
b. Proposed calibration schedule for regular shop and well-site calibration of all the tools including tolerance limits.
c. The calibration report (before, after and master) along with the recorded log prints and films. The master calibration report shall not be more than one month old. If for any particular tool, calibration is not possible at the Contractor's operations base / well site then the place of calibration along with the details regarding the frequency of calibration, field verification etc. must be indicated. In such cases Contractor has to ensure that there is no delay caused to the Company's planned logging program at no extra cost to Company.

I. Log quality control (lqc)

Contractor shall follow the log quality assurance procedure as per the standard industry practice desired by each tool. The log quality rating form shall be duly filled in and submitted with each log. At the time of logging operation, log quality will also be monitored by Company's Geologist / Petro physicist w.r.t. calibrations, repeatability and recording speeds and other necessary checks for different tools. Contractor shall follow the log quality assurance procedure as per the standard industry practice desired by each tool. The log quality rating form shall be duly filled in and submitted with each log. At the time of logging operation, log quality will also be monitored by Company's Geologist / Petro physicist w.r.t. calibrations, repeatability and recording speeds and other necessary checks for different tools.

J. Customer Instrument Service (CIS):

a. **Customer Instrument Service (CIS)** is for running tools and/or services of OIL and / or other Contractors utilizing Contractor's unit or vice versa, under mutual agreement between Contractor and other Contractor/OIL duly endorsed by the Company. CIS shall be availed under operational exigency, subject to technical suitability.
b. Bidders have to agree for running tools and/or services of OIL and/or other Contractors utilizing Contractor's unit and/or cable or vice versa, under mutual agreement between Contractor and other Contractor/OIL, provided the same is technically compatible.
c. **Contractor providing Unit/ Winch/Cable System:** Contractors providing logging unit under CIS shall provide cable, winch system, rig-up equipment, well head system/pressure control

equipment and operate the winch to lower the tool through his cable/system. Contractor will perform the rig-up and provide assistance in interfacing of the other Contractor's/OIL's equipment with their logging unit. Company provides necessary crossovers and telemetry for the same.

d. **Contractor providing Tool(s)/Services:** Contractors providing Tool(s) / service shall arrange all the equipment/ tools/ accessories required for successful logging operation. The Contractor must ensure compatibility with provided Logging units, arrange necessary Hardware, Crossovers, Connectors, Surface Panels and Operating Software for successful logging with such tools.

6. DELIVERABLES:

a. Wellsite data submission (immediately after recording):

i. Contractor will provide rush prints of all downhole / up hole tool runs, including QC calibration sheets and will provide the same to the Company well site Geologist or Petro-physicist prior to the next logging run.

ii. Digital data has to be submitted in CD/DVD/USB in LIS/DLIS and LAS format. Soft copy of the reports, figures etc. should be presented in PDF/Tiff or similar format and should also be submitted in CD/DVD/USB.

iii. Paper prints of each log suite to be submitted in 1:600 & 1:240 scale, three sets in each scale.

b. Final log data submission: Soft copy of final data to be submitted within 03 (three) days, while hard copy of logs and reports to be submitted within 05 (five) days of logging operation from the date OIL confirms data quality for final submission.:

i. Digital data in CD/DVD in LIS/DLIS and LAS format with proper label showing well name, service run etc. Soft copy of the reports, figures etc. should be presented in PDF/Tiff or similar format and should be submitted in CD/DVD/USB.

ii. Paper prints of each log suite in 1:600 & 1:240 scale, three sets in each scale showing acquisition/calibration information & header information.

iii. Three copies of wellsite quick-look interpretation on 1:200 & 1:500 scale wherever applicable.

iv. Two 1:20 scale colour print of processed Borehole Image Log (Static & Dynamic) or as desired by Company's representative. This should be delivered before Formation Tester Tool run.

v. Two copies of processed borehole image logs along with dips superimposed.

ANNEXURE-A

TECHNICAL SPECIFICATIONS CUM EVALUATION TABLE NOTE:

The technical specifications of the tools/services required are given below. Bidders must fill up their Service Code and Tool Specifications against OIL's required specification for each service in the matrix below and declare compliance/non-compliance to OIL's required specifications.

Technical Data Sheets / brochures must be submitted in support of the required features of tools / equipment and the same must be referred to with compliance/non-compliance declaration. If any required feature is not appearing in the technical literature / brochures, the bidder needs to specifically confirm availability of the same feature with suitable reference. Bidder should indicate their offered feature including additional features wherever required.

The following services should be fully combinable with each other so as to enable combo runs in any desired combination: A-1, A-2, A-3, A-4, A-5, A-7, S-8 & S-12.

STANDARD TOOLS/SERVICES

Service Code: TR-1	**LOGGING UNIT**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
1. Wireline Logging Skid Unit: Heavy duty, skid mounted offshore unit with 100% redundancy for essential equipment, fully computerized, air conditioned, tropicalized dual drum or split drum fitted with multiconductor and single conductor cable and Auxiliary Cable drum Plus all required accessories, workshop, tool pallets etc. designed to provide full-service capabilities for performing offshore wireline logging operations. The logging cabin must have seating place for the witness attending the logging job.			
2. The unit must be capable of carrying out all the operations mentioned in the SOW up to a well depth of 7500m.			
3. High strength cable: The 7-conductor cable shall be high strength cable having minimum rated breaking strength of 30,000 lbs and should have minimum temperature rating of 400°F. The cable should be without splice at the time of deployment.			

4. Releasable Wireline cable head: The logging unit should come with releasable type cable head as a standard package.		
5. Wireline jar: The logging unit should include Wireline jar as a standard package with the following specifications: Tool OD should be less than 4.125". Should be delivering jarring impact to stuck tools. Should be combinable with open hole logging tools. Should have the capability to be controlled from surface.		
6. Containers for Explosives and Radioactive sources.		
7. The logging cabin must have seating place for the witness attending the logging job.		
8. The package should also include down hole telemetry device, down hole tension device, knuckle joints, in-line centralizers, directional measurement device, down hole Max thermometer, standoffs etc. One tool of each type is expected to form the part of the package.		

Service Code: TR-2	**LINE PACKOFF**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
Line packoff for Standard Logging Cable for use in CBL under pressurized condition and for casing gun perforations. Minimum pressure rating 3kpsi.			

Service Code: TR-3	**PRESSURE CONTROL EQUIPMENT FOR THROUGH TUBING OPERATIONS**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ non-compliance**
Pressure Control Equipment for Tubing Operations for slim cable. Minimum pressure rating: 15k psi. The height of PCE should be able to accommodate 6m TTP gun perforation to be carried out in one run.			

Service Code: TR-4	**LOGGING WHILE FISHING**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	The service should enable recording of log while recovering a stuck tool string in order to save the time of an additional logging run and associated conditioning trip. The LWF system should enable recording of overlapping continuous log interval equal to the distance between the casing shoe and rig floor by suitable placement of Cable Side Entry Sub.		
OTHER REQUIREMENTS	Cable Side Entry Sub of sizes 3¼" to 7¼" for use in different conditions depending on Bit /drill pipe size. Logging While Fishing Adaptor or any other cross-over to be provided by bidder.		

Service Code: TR-5	**DATA TRANSMISSION AND COMMUNICATION**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
Transmission of wireline logging data from well site to specified Operator Locations in real-time via own/third party satellite and LAN media using industry standard third-party wellsite data transmission systems.			

Service Code: S-8	**HIGH RESOLUTION ARRAY INDUCTION RESISTIVITY WITH SP**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
	i. Induction based high-resolution formation		

MEASUREMENTS	resistivity measurement tool with seven or more induction Coil arrays. ii. All array curves should be induction-based measurements only.		
DEPTH OF INVESTIGATION	Deep: 90 inches minimum Shallow: 10 inches minimum		
RANGE:	0.1 to 1,000 ohm-m		
ACCURACY	± 0.75-ohm m or +/- 2 % (Whichever is greater)		
SAMPLING RATE	Minimum 2 samples/ft		
VERTICAL RESOLUTION	1, 2 and 4 ft. Depth of investigation (from center of borehole) 10" to 90" (50% of Integrated Radial response) – 10", 20", 30", 60" & 90" measurements		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES:	Combinable with nuclear porosity and spectral gamma ray tools.		
WELL SITE PRODUCT:	Raw array curves including SP. Coherence map of arrays. Invasion images. Resistivity profiles at 10", 20", 30", 60" & 90" for 1, 2, 4 ft vertical resolution. Rt, Rxo, DI (Diameter of invasion).		

Service Code:	**DUAL SPACED COMPENSATED NEUTRON POROSITY**	**Bidder's Code:**	

A-2			
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Formation porosity measurement using Dual Spaced Compensated Neutron Services		
DEPTH OF INVESTIGATION	1.0-5.5 inches minimum		
RANGE	0 to 60 PU (Limestone) with a linear response in 0-40 PU range.		
ACCURACY	+/- 1.4 PU for 0-20 PU +/- 3 PU for 20-30 PU +/- 6 PU for 30-*45 PU		
SAMPLING RATE	2-8 samples/ft		
VERTICAL RESOLUTION	Standard: 36 inches		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES:	i. Provision to record high resolution data. ii. Provision to correct neutron porosity when recorded in cased hole. iii. Provision to record in Cased Hole also.		

Service Code:	**FORMATION DENSITY with Pe and CALIPER**	**Bidder's Code:**	

A-3			
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Tool to measure Bulk Density, Density Correction, Photo-electric Absorption Cross-section, caliper.		
DEPTH OF INVESTIGATION	1.5-4.0 inches minimum		
RANGE	RHOB: 1.3-3 gm /cc, 0-10 PE		
RESOLUTION	Density: +/- 0.015 gm/cc PE: +/- 5%		
ACCURACY	Density: +/- 2% for 1.0-1.67 gm/cc : +/- 1.5% for 1.67-3 gm/cc		
SAMPLING RATE	2-8 samples/ft		
VERTICAL RESOLUTION	Standard: 33 inches Enhanced Mode: 9 inches		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES:	i. Provision to record high sampling rate for high resolution data through software control. ii. Resolution enhancement through post processing.		

Service Code: **A-4**	**NATURAL GAMMA RAY SERVICE**	**Bidder's Code:**	

OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Tool to measure total GR in API units using Scintillation counter (NaI Thallium activated)		
RANGE	0 to 400 API, linear response from 0 to 200 API		
ACCURACY	±7% of the reading		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **A-5**	**SPECTRAL GAMMA RAY SERVICE**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i. Total GR 0-1500 API ii. U, Th, K concentration measurements separately iii. Minimum 2 sample per ft		
RANGE	Minimum of: 0 to 400 API Total GR 0-40 PPM (U) 0-40 PPM (Th)		
ACCURACY	+/-5% of measurement (GR) +/-4% of measured value for U, Th and K		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		

TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
REMARKS	Combinable with all standard tools		

Service Code: A-6	**SIDE WALL CORE GUN**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Side wall core recovery in soft, medium and hard formations. ii. Depth positioning of SWC by Gamma ray. iii. Core barrel size 0.85" x 1.4"		
SPECIFICATIONS	At least 24 samples from single run extended up to 48 samples or more. Gamma ray 0 to 200 API		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	i. Core to be provided in bottle. ii. Bullet design is suitable for optimum core recovery in various ranges of formation consolidation. iii. Minimum two guns combinable in one run.		

Service Code: **A-7**	**BOREHOLE DEVIATION SURVEY**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Bore hole deviation, hole azimuth, relative bearing		
RANGE	Hole deviation: 0-90°, Hole Azimuth: 0-360°, RB: 0-360°		
RESOLUTION/ ACCURACY	Azimuth: ± 4°, Deviation: ± 2°		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
REMARKS	Combinable with all standard tools		

Service Code: **A-8**	**CEMENT BOND EVALUATION SERVICES**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Cement Bond Evaluation (including VDL, Travel time, GR, CCL) based on sonic arrival amplitude in 4-1/2" 5 ½", 7", 9 ⅝" or 9 ⅞" and 13 ⅜" or 13-5/8" casings/liners. Recording under pressurized conditions is also required.		
RANGE	i. Acoustic amplitude 0-100 mV ii. VDL 200-1200 µs		

	iii. GR 0-200 API.		
VERTICAL RESOLUTION	CBL: 3 ft VDL: 5 ft		
TOOL DIAMETER	Suitable for above mentioned casings/liners.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **S-12**	**DIPOLE SHEAR SONIC IMAGER with multi-arm Caliper**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i. Delta T shear in cross dipole mode (fast slowness & slow slowness with direction). ii. Delta T Stoneley iii. Delta T Compressional iv. 4-arm caliper or more for borehole geometry and anisotropy		
HOLE SIZE LIMIT	5-7/8 inches to 17.5-inch dia.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	i. Minimum 2 dipole transmitters are orthogonally placed. ii. Two dipole measurements for redundancy. iii. Direction measurement with anisotropy measurement in single run.		

	iv. Measurement to compute absolute value of effective permeability from Stoneley. v. Measurements to compute formation anisotropy, identification of fracture orientation, geo-mechanical properties and borehole stability.		
WELLSITE PRODUCT	i. Shear, Compressional & Stoneley Slowness with integrated travel times, Vp/Vs, Poisson's ratio. ii. Raw waveforms of Shear, Compressional & Stoneley. iii. Coherence plot of waveform.		
POST PROCESSED DATA	i. Compressional, Shear (both X & y direction) and stonely slowness with integrated travel time, Vp/Vs & gas zone detection. ii. Geo-mechanical properties viz. young, shear and bulk modulus, poisson's 2ratio etc. iii. Evaluation of formation anisotropy around borehole, anisotropy map. iv. Permeability from Stoneley, Stoneley fracture identification. v. Report on acquisition and processing.		

Service Code: **A-10**	**PIPE CONVEYED WIRELINE LOGGING**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	Pipe conveyed wire line logging equipment (TLC/TPL or equivalent) with following minimum features:		

	i. Tool protection in holes with large and medium radius of curvature. ii. Mud circulation through drill pipe. iii. Multiple wet connections without tripping tools. iv. Cable side entry sub must have 1000 psi (min) working pressure cable pack-off seal.		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 12 ¼ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **A-11**	**FREE POINT SURVEY (STUCK-UP DETECTION)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Percentage free in stretch and in torque (including log presentation) for tubing, casing and drill pipe ranging from 2 ⅞ inch to 9 ⅞ inch.		
TOOL DIAMETER	Suitable for pipe sizes 2 ⅞ inch to 9 ⅞ inch drill-pipe/tubing/casing.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	Should be run with CCL		

Service Code: **A-12**	**BACK-OFF / STRING SHOT SERVICES**	**Bidder's Code:**	

OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENT	Explosive detonation for attempting to release or back-off stuck tubing, casing and drill pipe.		
PIPE SIZES	2 ⅞ inch to 9 ⅞ inch Tubing/casing/Drill pipes		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	Should be run with CCL		

Service Code: A-13A/ A-13B	**BRIDGE PLUG SETTING / RETAINER PACKER SETTING**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Bridge plug setting and retainer packer setting for 4-1/2", 5", 5 ½", 7", 9-5/8" & 9 ⅞" liner/casing. ii. Setting tools compatible with above mentioned sizes plug/packer. iii. Junk Basket for above mentioned casing sizes.		
TOOL DIAMETER	Industry standard to carry out plug/packer setting in above mentioned casing/liner sizes.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	i. Combinable with CCL. ii. Bridge plugs and packers will be supplied by OIL. Also,		

	necessary Adapter kits for the above services will be provided by OIL.		

Service Code: A-14	**THROUGH TUBING PERFORATION (DEEP PENETRATION CHARGES)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	Retrievable/Semi-expendable perforation gun system for passing through 2 ⅞" tubing (ID of 2.44"). Perforator system tested as per API 19B/ API 43, performance normalized to 5000psi target compressive strength. The gun system must be capable of up to 6m perforation in single run.		
2"-2⅛" DEEP PENETRATION CHARGE (SPIRAL, 6 SPF)	SPF: 6 EHD ≥ 0.26 inches TTP ≥ 25 inches (Bidder to provide API 19B/ API 43 certificate.)		
2-2⅛" DEEP PENETRATION CHARGE (ZERO PHASE, 6 SPF)	SPF: 6 EHD ≥ 0.26 inches TTP ≥ 27 inches (Bidder to provide API 19B/ API 43 certificate.)		
TOOL DIAMETER	Industry standard suitable for tubing sizes 2 ⅞ inches.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

OTHER FEATURES	i. Should include surface equipment to perforate in under-balanced conditions and live wells. ii. Suitable to be operated using Crane/mast unit also. iii. Combinable with both Gamma ray and CCL for depth correlation.		

Service Code: **A-15**	**CASING GUN PERFORATION**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	Casing gun system for perforation in 4-½", 7", 9-5/8" and 9-⅞" casing/liner. Perforator system tested as per API 19B/ API RP43, performance normalized to 5000psi target compressive strength.		
2 ⅞" or 2 ¾ " DEEP PENETRATION CHARGE (for 4½" liner)	SPF: 6 EHD ≥ 0.30 inch TTP ≥ 27.5 inch Phasing: 60° Bidder to provide API 19B/ API RP43 certificate.		
4½-4 ⅝" DEEP PENETRATION CHARGE (for 7-inch csg)	SPF: 5 or 6 EHD ≥ 0.33 inch TTP ≥ 45 inch Bidder to provide API 19B/API RP43 certificate.		
4½-4 ⅝"	SPF: 5 or 6		

BIG HOLE CHARGE (for 7-inch csg)	EHD ≥ 0.7 inch TTP ≥ 5 inch Bidder to provide API 19B/ API 43 certificate.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	i. Necessary Adapter kit for the above services will be provided by the contractor. ii. Combinable with CCL.		

Service Code: **A-16**	**DEPTH DETERMINATION** **(Dummy/GR/CCL/Junk Basket)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ non-compliance**
REQUIREMENTS	i. Any combination from the following tools shall be required to be run in tubing/liners/casing/drill pipe for the purpose of depth determination or hole debris cleaning: ii. CCL, Gamma Ray, Sinker bar, Dummy, Junk basket iii. Combinability with all cased hole services.		
TOOL DIAMETER	i. Suitable for depth determination in tubulars from 2 ⅞" tubing/drill pipe to 13 5/8-inch casing. GR and CCL tools should be suitable for these sizes. ii. Junk baskets with gauge rings suitable for 4-½", 5", 5-½", 7", 9 ⅝" & 9 ⅞" liner/casings.		

	iii. Required dummy sizes for DD-NPO runs: 1-11/16" and 2 ⅛".		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **A-17**	**EXPLOSIVE PIPE CUTTER**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ non-compliance**
REQUIREMENTS	Explosive Jet Cutter for following Tubing/Casing: 2.3/8-inch OD tubing 2 ⅞ inch OD tubing 3-½ inch OD tubing 4-½ inch OD tubing 4-½ inch casing / Liner 5-½ inch casing 7-inch OD casing / Liner 9 ⅝ inch OD casing 9-⅞ inch OD casing		
TOOL DIAMETER	Suitable for above pipe sizes.		
TEMPERATURE RATING	325° F minimum.		

PRESSURE RATING	18000 psi minimum		

Service Code: A-18	**SEVERING/COLLIDING TOOL**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	Severing/Colliding Tool for following drill pipes/drill collar: 2 ⅞" SLH 90 drill pipe 3-½" OD drill pipe 5" OD drill-pipe 5-1/2" OD drill-pipe 5-7/8" OD drill-pipe 4-3/4" OD drill collar 6-1/4"/6 ½"/6-3/4" OD drill collar 8"/8-1/4" OD drill collar 9-1/2" OD drill collar		
TOOL DIAMETER	Suitable for above pipe sizes.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **A-19**	**PUNCTURE SERVICES**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENT	To puncture 2 ⅞ inch OD tubing to 5-7/8 inch OD drill pipe.		
TOOL DIAMETER	Tool must be capable of running in through above tubulars.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

SPECIAL TOOLS/SERVICES

Service Code: **A-9**	**CEMENT EVALUATION AND CASING INSPECTION**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. 360° pipe inspection and cement bond evaluation for casings/liners, using ultrasonic / piezo-electric signals / pulses. ii. Both Cement Evaluation and Pipe Inspection services must be carried out in a single run, using single tool or combination of tools. iii. And if required by OIL, only Cement Evaluation or only Casing Inspection can also be carried out.		
MEASUREMENTS	i. Acoustic / pizeo-electric impedance image with resolution to distinguish,		

	liquid, cement slurry behind casing. ii. Identification of cement channels or voids of width 1.40 inch or more in 5-7/8" or 7-inch casing and 1.90 inch or more in 9 ⅝" or 9-7/8" and 13 ⅜" or 13-5/8" casings/liners. iii. Cement strength. iv. Mud attenuation and acoustic velocity. (optional; only if needed for cement map). v. Inside diameter and thickness of casing. vi. Casing corrosion evaluation.		
TOOL DIAMETER	Industry standard to log wells completed with 5-7/8", 7" & 9 ⅝" or 9-7/8-inch casing/liner with high deviation up to 85°.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
WELLSITE PRODUCT	Processed data is required to be provided at well site as a standard presentation along with field logs.		
POST PROCESSED DATA	i. Azimuthal mapping of Casing to cement bond, Micro-annulus. ii. Casing ID/OD for pipe corrosion. iii. Report on acquisition and processing.		

Service Code: **S-1**	**LOOK-AHEAD VERTICAL SEISMIC PROFILING (VSP)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Tri axial data acquisition to provide high quality VSP		

	compressional and shear event. ii. Multi-level 3-component (3C) downhole geophones iii. At least five shuttle arrays to save measurement time, adjustable distance between shuttles from 10 m to 20 m or more. iv. Energy source: air gun. v. Bidder shall provide energy source, surface equipment and all other accessories as required. vi. Suitable for Data acquisition in cased hole and open hole. vii. Real-time data transmission system for Q		
MEASUREMENTS	Seismic stacks travel time v/s depth plots and raw seismic traces of individual shots. To conduct Zero Offset VSP as a baseline survey for velocity calibration. And execute Look-Ahead VSP survey at multiple depths as drilling progresses		
RESOLUTION	± 1 m sec for shots at same level, ± 2 m sec for shots fired in up and down passage on the same level		
HOLE SIZE LIMIT	5-7/8 inches to 17.5 inches diameter in open hole		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	Tri-axial measurement data must be made available in SEG-Y.		
POST PROCESSED DATA	Processing of Borehole Seismic Services (VSP) data in open hole & cased hole relevant to acquisition mode with report comprising of:		

	Composite Display of Down-going waves, corridor stack (repeating 6-7 times) with check-shot corrected Sonic, Density, Gamma and Formation Tops. This display is to be with respect to SRD (seismic reference datum). Display of original Down-going (i.e. after separation) waves and display of Down-going waves after Deconvolution. Details of velocity filter and Deconvolution parameters as part of processing note. VSP Velocity Listing Table: The primary use of VSP is for accurate well-to-seismic ties. Seismic sections are always based on the SRD (seismic reference Datum). Therefore, velocity listing table should have a column mentioning SRD so that the average velocity and interval velocity can be seen w.r.t. SRD. Time-Depth Curve: The Depth axis should start from SRD level. At right hand side, there should be a color bar indicating the Formation Tops and Thickness. Time-Depth Table: Interval velocity and Average velocity should be mentioned along with TWT. Check shot data. Report on acquisition and processing. **A. Real-Time Processing & Preliminary Interpretation** 1. Conduct on-site QC processing to assess data quality.		

	2. Generate real-time velocity updates for time-depth conversion. 3. Provide immediate Look-Ahead prediction reports at each acquisition stage (within 24 hours of each acquisition stage). 4. Identify overpressure zones, faults, and stratigraphic discontinuities. 5. Depth Prediction to give seismic target depth. **B. Post-Acquisition Processing & Final Interpretation** 1. Perform advanced processing, including: i. Deconvolution and wavefield separation. ii. Depth imaging to enhance subsurface resolution. iii. Inversion techniques to generate acoustic impedance logs below TD. 2. Integrate VSP results with surface seismic, well logs, and drilling data. 3. Prepare a final interpretation report with: i. Velocity model refinements. ii. Structural and stratigraphic analysis. iii. Drilling risk assessment. **C. DELIVERABLES** The contractor must provide the following: 1. Real-Time Look-Ahead Reports (within 24 hours of each acquisition stage).		

	2. Final Processed VSP Data (SEG-Y format) with interpretation. 3. Well Tie Report correlating seismic, VSP, and well logs. 4. Geohazard and Overpressure Assessment Report. 5. Comprehensive Final Report, including: i. Methodology and acquisition details. ii. Processed data and interpretations. iii. Recommendations for further drilling.		

Service Code: **S-2**	**NUCLEAR MAGNETIC RESONANCE LOGGING**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i. T2 distribution from 0.5 millisecond or less to 3.0 seconds. ii. Formation lithology independent porosity, pore size distribution & permeability measurements. iii. Free fluid index, clay & capillary bound fluids. iv. Permeability estimation. v. Pore size distribution. vi. Hydrocarbon typing and quantification in continuous recording mode. vii. Continuous saturation profiling.		
VERTICAL RESOLUTION	6 feet or better		

HOLE SIZE LIMIT	5-7/8 inches to 12.25-inch dia.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
WELL SITE PRODUCT	NMR porosity, T2 distribution, free fluid index, permeability estimation.		
POST PROCESSED DATA	i. Processing of data of Nuclear Magnetic Resonance Logging Services for ii. Determination of total and effective porosity, capillary and clay-bound water & free fluid volume, pore size distribution, permeability, iii. Hydrocarbon typing and quantification. iv. Continuous saturation profiling. v. All answer products relevant to acquisition mode, such as saturation profiling, high resolution processing, T1 profiling, fluid characterization & multi-depth magnetic resonance (MR) Output. vi. Report on acquisition and processing.		

Service Code: **S-3**	**MICROELECTRIC IMAGER TOOL**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i. High resolution micro-resistivity-based borehole imaging for formation image extraction with direction in open hole to characterize sedimentary bodies,		

	sedimentary dips, structural analysis, secondary porosity evaluation, reservoir characterization etc. ii. At least 59% coverage in 7 ⅞ inch hole in one pass. iii. Each caliper arm must have independent electronics.		
MEASURING RANGE	Micro resistivity: 0.2-to-2000-ohm m Azimuth: 0 to 360 degrees Rotation: 0 to 360 degrees Deviation: 0 to 90 degrees Caliper: 6 to 16 inches		
VERTICAL RESOLUTION	0.2 inch in resistivity measurements.		
HOLE SIZE LIMIT	5-7/8 inches to 16-inch dia.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
WELL SITE PRODUCT	i. Colour image of static image processing. ii. Raw micro-Resistivity measurement with deviation, caliper and Gamma ray data for post processing. iii. Computed Mean Square Dip (well site/ post processed data).		
POST PROCESSED DATA	i. Processing of data for Static and dynamic image, image enhancement for structural, sedimentological study. ii. Structural analysis from dip and image data (Using Interactive Dip Picking) for presence of fault fracture and other structural features and their nature, borehole		

	breakout pattern and indicated pattern etc. iii. Sedimentological analysis from dip and image data (Using Interactive Dip Picking) for identification of beds, bedding internal structure like cross laminations, broad depositional environment indicated integrating other basic log data. iv. Fracture analysis, aperture evaluation including fracture aperture, fracture density, fracture porosity curves and fracture dips in plots. v. Texture characterization and heterogeneity analysis. vi. Report on acquisition and processing.		

Service Code: **S-7**	**THROUGH TUBING CEMENT BOND EVALUATION**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ non-compliance**
REQUIREMENTS	Through tubing cement evaluation tool (CBL-VDL) for evaluation of cement bond between pipe to cement and cement to formation for 4 ½", 5", 5 ½" & 7" liners/casings and to run through 2 ⅞" tubing		
MEASUREMENTS & RANGE	Acoustic amplitude 0-100 mv (3 ft T-R spacing) VDL 200-1200 micro-sec (5 ft T-R spacing) GR 0-200 API, CCL, Travel time (3 ft T-R spacing)		
TOOL DIAMETER	Suitable for 4 ½", 5", 5 ½" & 7-inch liners/casings and to run through 2 ⅞" inch tubing		

TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
Service Code: **A-1**	**DUAL/ARRAY LATEROLOG RESISTIVITY + MICRO RESISTIVITY**	**Bidder's Code:**	
OIL's Required Specifications for **DUAL LATEROLOG RESISTIVITY**		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i. Deep and medium focused laterolog resistivity measurement of formation for simultaneous deep and shallow depths of investigation. ii. Spontaneous potential measurements. Note: High Resolution Array Laterolog tool is also acceptable against Dual Laterolog tool. HRLA tool should provide at least 4 depths of investigations (DOI ≥ 35 in median response) with 1 ft or better vertical resolution.		
DEPTH OF INVESTIGATION	LLD: 55-84 inches minimum LLS: 24-36 inches minimum		
RANGE:	LLD: 0.2–40,000-ohm m LLS: 0.2-2,000-ohm m		
ACCURACY	± 0.2 ohmm at 0.2-1 ohmm Greater of ±5 % or ±0.2 ohmm at 1-2000 ohmm		
SAMPLING RATE	Minimum 2 samples/ft		
VERTICAL RESOLUTION	24 inches or better		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		

TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OIL's Required Specifications for MICRO RESISTIVITY			
MEASUREMENTS	Invaded Zone Resistivity for Rxo measurement with borehole caliper		
DEPTH OF INVESTIGATION	0.5 inch to 1.5 inches		
RANGE:	0.2-2000 Ohm m, Caliper- 6 inches to at least 20 inches		
ACCURACY	i) Resistivity: : +/- 5% at 0.2-to-200-ohm m : +/- 10% at 200–2000-ohm m ii) Caliper : : +/- 10 % Accuracy		
SAMPLING RATE	2-8 samples/ft		
VERTICAL RESOLUTION	3.0 inch or better		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F Minimum.		
PRESSURE RATING	18000 psi minimum		

Service Code: **S-11**	**ELEMENTAL CAPTURE SPECTROSCOPY**	**Bidder's Code:**	

	(ECS/GEM/FLEX equivalent)		
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	Concentration of elements from single neutron induced Gamma ray spectrometer for the determination of Silicon, calcium, Iron, Gadolinium, Titanium, mica feldspar composite and other minerals for accurate clay volume estimation and clay typing.		
TOOL DIAMETER	To be capable of running in minimum 5-7/8 inch to max. 20 inch.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
POST PROCESSED DATA	i. Spectrolith lithology spectra from corrected clay model and dry weights. Determination of Silicon, calcium, Iron, Gadolinium, Titanium, mica feldspar composite and other minerals for accurate clay volume estimation and clay typing. ii. Report on acquisition and processing.		

Service Code: **S-15**	**ROTARY SIDE WALL CORING (NON-EXPLOSIVE)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Side wall core recovery in soft-rock formations as well as hard-rock formations by mechanically drilling cores into the borehole wall. ii. Depth positioning using Gamma ray.		

	iii. Diameter of core of minimum 1.5" and minimum length of core of 2.3" and having an overall volume not less than 04 in3. iv. Core samples should be isolated from each other within the coring tool. v. Rotary coring tool must be able to be deployed in wireline as well as pipe conveyed logging.		
SPECIFICATIONS	At least 50 samples from single run.		
TOOL DIAMETER	Industry standard to recover side wall cores in hole sizes from 5-7/8 inch to 12 ¼ inch.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	Core samples to be provided in bottle.		

Service Code: **S-16**	**3D INDUCTION RESISTIVITY**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i. Evaluation of resistivity anisotropy by triaxial measurement of formation resistivities. Service should be inclusive of directional package, if any. ii. Evaluation of water saturation in anisotropic formations as in laminated formations and low resistivity pay zones.		
DEPTH OF INVESTIGATION	90" or more.		

RANGE	0.5 to 100 ohm-m Resistivity for triaxial measurements.		
VERTICAL RESOLUTION	2ft or better for R-Horizontal and R-Vertical.		
TOOL DIAMETER	Industry standard to log wells drilled with 5-7/8 inches to 17 ½ inch bit		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
POST PROCESSED DATA	Contractor has to provide following or any other relevant post processed data for 3D Induction Resistivity tool without any extra cost to company: Evaluation of resistivity anisotropy, water saturation in anisotropic formations as in laminated formations and low resistivity pay zones.		

Service Code: **S-17**	**MULTI FREQUENCY DIELECTRIC TOOL**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Direct measurements of water saturation independent of water resistivity (Rw). ii. Dielectric dispersion analysis for insitu measurement of rock texture using multiple frequencies (4 or more) in both invaded and non-invaded zones. iii. Continuous Archie m & n exponent log from rock texture measurements for determining saturations beyond the invaded zone iv. Hydrocarbon volume mobility in heavy oil reservoirs.		

MEASUREMENT RANGE	Permittivity: 1-100 Conductivity: 0.1 to 3000mS		
DEPTH OF INVESTIGATION	Upto 4" or more.		
VERTICAL RESOLUTION	1” or better for water-filled porosity and thin-bed analysis		
TOOL DIAMETER	Suitable for hole sizes 5-7/8" to 17.5" or more		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
wellsite product	i. Water filled porosity and salinity independent of formation water resistivity. ii. ADT caliper iii. RXO log both in water filled porosity at 1".		
POST PROCESSED DATA	Contractor has to provide following post processed data for Multi Frequency Dielectric tool without any extra cost to company: All Answer Products relevant to Multi-frequency Dielectric Scanner service, such as insitu di-electric dispersion analysis, continuous cementation exponent, detailed formation evaluation and estimation of the saturation at single and two depths of investigation, formation water salinity using more than one model.		

Service Code: **S-18A**	**STIM SLEEVE for 2 ⅞” or 2 ¾ " Casing gun**	**Bidder’s Code:**	
OIL's Required Specifications		**Bidder’s Specification**	**Compliance /non-compliance**
	Stim sleeves for 2 ⅞” or 2 ¾ " casing gun in service code A-15 (a).		

REQUIREMENTS	Bidder to carry out pre-job software simulation/modelling for planning optimal STIM operation. The Casing gun should be capable of deployment through Wireline or drill pipe/tubing. Bidders to quote for only STIM sleeves only (with related accessories) as casing gun hardware/main explosives will be utilized & payable against A-15 (a) service. Associated accessories like collars etc., to be provided by bidder.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **S-18B**	**STIM SLEEVE for 4½"-4 ⅝" " Casing gun**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	Stim sleeves for 4½"-4 ⅝" casing gun in service code A-15 (b or c). Bidder to carry out pre-job software simulation/modelling for planning optimal STIM operation. The Casing gun should be capable of deployment through Wireline or drill pipe/tubing. Bidders to quote for only STIM sleeves only (with related accessories) as casing gun hardware/main explosives will be		

	utilized & payable against A-15 (b or c) service. Associated accessories like collars etc., to be provided by bidder.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		

Service Code: **S-19**	**FIBER OPTIC VERTICAL SEISMIC PROFILING (VSP)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Fiber optic based Vertical Seismic Profiling of boreholes. ii. Tri axial data acquisition to provide high quality VSP compressional and shear event. iii. Full well profile seismic data acquisition in single shot. iv. Energy source: air gun. v. Bidder shall provide energy sources, surface equipment and all other accessories as required. vi. Suitable for Data acquisition in cased hole and open hole. vii. Real-time data transmission system for Q		
MEASUREMENTS	Seismic stacks travel time v/s depth plots and raw seismic traces of individual shots. To conduct Zero Offset VSP as a baseline survey for velocity calibration.		
RESOLUTION	Spatial resolution: 1.5m (maximum) ± 1 m sec for shots at same level,		

	± 2 m sec for shots fired in up and down passage on the same level		
HOLE SIZE LIMIT	5-7/8 inches to 17.5 inches diameter in open hole		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	Tri-axial measurement data must be made available in SEG-Y.		
POST PROCESSED DATA	i. Contractor has to provide following post processed data without any extra cost to company: ii. Processing of Borehole Seismic Services (VSP) data in open hole & cased hole relevant to acquisition mode with report comprising of: iii. Composite Display of Down-going waves, corridor stack (repeating 6-7 times) with check-shot corrected Sonic, Density, Gamma and Formation Tops. This display is to be with respect to SRD (seismic reference datum). iv. Display of original Down-going (i.e. after separation) waves and display of Down-going waves after Deconvolution. v. Details of velocity filter and Deconvolution parameters as part of processing notes. vi. VSP Velocity Listing Table: The primary use of VSP is for accurate well-to-seismic ties. Seismic sections are always based on the SRD (seismic reference Datum). Therefore, velocity listing table should have a column mentioning SRD so that the average velocity and interval velocity can be seen w.r.t. SRD.		

	vii. Time-Depth Curve: The Depth axis should start from SRD level. At right hand side, there should be a color bar indicating the Formation Tops and Thickness. viii. Time-Depth Table: Interval velocity and Average velocity should be mentioned along with TWT. ix. Check shot data. x. Report on acquisition and processing. **A. Real-Time Processing & Preliminary Interpretation** 1. Conduct on-site QC processing to assess data quality. 2. Generate real-time velocity updates for time-depth conversion. 3. Identify overpressure zones, faults, and stratigraphic discontinuities. 4. Depth Prediction to give seismic target depth. **B. Post-Acquisition Processing & Final Interpretation** 1. Perform advanced processing, including: Deconvolution and wavefield separation. Depth imaging to enhance subsurface resolution. Inversion techniques to generate acoustic impedance logs below TD. 2. Integrate VSP results with surface seismic, well logs, and drilling data.		

	3. Prepare a final interpretation report with: i. Velocity model refinements. ii. Structural and stratigraphic analysis. iii. Drilling risk assessment. **C. DELIVERABLES** The contractor must provide the following: 1. Real-Time VSP Reports (within 24 hours of acquisition). 2. Final Processed VSP Data (SEG-Y format) with interpretation. 3. Well Tie Report correlating seismic, VSP, and well logs. 4. Geohazard and Overpressure Assessment Report. 5. Comprehensive Final Report, including: Methodology and acquisition details. Processed data and interpretations. Recommendations for further drilling.		

Service Code: AD-1	**THROUGH DRILL PIPE SLIM OH LOGGING**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	1. Slim OH tools deployable through drill pipe and pass-through drill pipes and log the well during hole conditioning trip and capable of recording real-time mode as well as memory mode.		

	2. The tool shall have the following deployment methods: a. Wireline through pipe (bypass trouble zone through drill pipe) b. Wireline drop off (pull-out with drill pipe and recording in memory mode) 3. The system should allow drill pipe rotation and reciprocation for hole reaming at all times. 4. The system should be capable of mud circulation at all times. 5. BHA should include float-valve to stop flow of fluid up into drill string.		
HOLE SIZE	To log hole sizes from **5-7/8" to 12 ¼".**		
TOOLS REQUIRED	**1) Array Induction resistivity (Laterolog also acceptable)** **Array Induction specs:** 5 depth of investigations or more Vertical resolution; 2ft or better Measurement range: 0.2 to 2000 Ωm or higher **Note:** OIL's requirement is Array Induction, however, Laterolog resistivity is also acceptable in place of Array induction. Required specifications for Laterolog tool is provided below in case the Bidder chooses to offer Laterog tool: • Deep resistivity DOI = 4 ft • Shallow resistivity DOI = 16 in • Measurement range: 0.2 to 20000 Ωm or higher • Accuracy: 5% or better • Vertical resolution: 2ft or better		

	2) Density tool Bulk density, Photoelectric absorption cross-section and Caliper. • DOI ≥ 2.0” • Measurement range: Density 1.5 to 3.0 gm/cm3, Pe 1 to 10 B/e • Accuracy: ±0.02 g/cm3 and ±0.2 B/e or 1.6% • Vertical resolution: 14 in or better **3) Neutron porosity** Thermal neutron porosity. • DOI ≥ 9 inches • Measurement range: 0 to 60 porosity units • Accuracy: ±1 pu or better at 20pu • Vertical resolution: 15 in or better **4) Natural Gamma ray** Total natural Gamma ray in API units (calibrated). • DOI ≥ 09 in • Measurement range: 0 to 400 GAPI • Accuracy: ±5% or better • Vertical resolution: 2 ft or better **5) Borehole deviation tool** • Bore hole inclination, Hole azimuth, Relative bearing • Accuracy: ±5° (Azimuth) and ±2° (Inclination) or better **6) Dipole Shear Sonic** Monopole compressional, Dipole shear, Full waveforms		
TOOL DIAMETER	Suitable for deployment through drill pipe of sizes 5-7/8″ (OD) or less.		

TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER REQUIREMENTS	Contractor shall provide necessary equipment, accessories and BHA/bit required for through-bit logging operations in afore-mentioned modes of deployment.		
PROCESSED DATA	Contractor has to provide following post processed data for Dipole Shear Sonic tool without any extra cost to company: i) Compressional, Shear (both X & Y direction) and Stoneley slowness with integrated travel time, Vp/Vs & gas zone detection. ii) Geo-mechanical properties viz. Young, shear and bulk modulus, Poisson's ratio, etc. iii) Evaluation of formation anisotropy around borehole, anisotropy map iv) Permeability from Stoneley v) Stoneley fracture identification		

Service Code: AD-4	**CASED HOLE FORMATION RESISTIVITY**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Tools should be capable of measuring formation resistivity through casing and cement. ii. Can be run both through tubing as well as in normal condition.		

VERTICAL RESOLUTION	4 feet		
DEPTH OF INVESTIGATION	32 ft		
RANGE	1–100-ohm m		
TOOL DIAMETER	Tool Should be capable of measuring resistivity in casing size of 4-½" to 13-⅝" casing.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
PROCESSED DATA	Contractor has to provide all the relevant post processed data for Cased Hole Formation Resistivity tool without any extra cost to company:		

Service Code: AD-5	**BRIDGE PLUG SETTING / RETAINER PACKER SETTING** **(For 4 ½ "Casing/Liner)**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	i. Bridge plug setting and retainer packer setting for 4½" liner/casing. ii. Setting tools compatible with above mentioned sizes plug/packer. iii. Junk Basket for above mentioned casing sizes.		
TOOL DIAMETER	Industry standard to carry out plug/packer setting in above mentioned casing/liner sizes.		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	i) Combinable with CCL. ii) Bridge plugs and packers will be supplied by OIL. Also, necessary		

	Adapter kits for the above services will be provided by OIL.		

Service Code: AD-7	**FORMATION SAMPLING TOOL FOR ULTRA LOW MOBILITY**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
REQUIREMENTS	Dynamic formation testing and fluid sampling service with i. Sampling in formations having **mobility upto 0.1 mD/cP or less.** ii. Minimum two probes combinable with spectral/ resonance/density-based fluid analyzer. iii. Any number of pressure test in one run. iv. Tool should be capable of focused sampling. v. Formation and mud pressure with **quartz pressure gauge**, pressure gradient, flow rate and mobility. vi. Facility to collect minimum two PVT samples of 450 cc each or more and two PVT/ non-PVT 1000 cc each or more (may be combinable using 2 or more sample chambers for 1000 cc collection) **in single run.** vii. If required bidder has to provide the facility to collect more than two PVT/Non-PVT samples along with sample bottles. viii. 4 PVT sample bottles must be mobilized with tool. The bottles should be certified by competent authority for transportation by passenger Aircraft and Helicopter. ix. Pump out module with ability to control flow rate down hole while sampling. x. **Live real time Fluid Analysis module** to distinguish oil/gas and water. xi. Capable of measuring viscosity/GOR or density of sample and bubble point etc.		

	xii. Differentiation capability of formation fluid from filtrate while sampling in combination with resistivity measurement and takes only formation fluid sample.		
RESOLUTION	**Quartz Gauge:** 0.01 psi (14.7-15000 psi) or better **SG:** 0.2 psi (14.7-15000 psi)		
TOOL DIAMETER	For open hole sizes 5-7/8" to 17 ½ ".		
TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
OTHER FEATURES	i. Different types and sizes of probes are to be provided as per technical requirement to make the Formation sampling job successful.		
WELL SITE PRODUCT	i. Provision to provide mobility values at drillsite and bring out gradient plots. Pre-test summary sheet with details of pretest data and as per format provided by company. ii. Live real-time fluid analysis product.		
POST PROCESSED DATA	**Contractor has to provide following post processed data without any extra cost to company:** i. Identification of fluid pressure gradient, fluid contacts, mobility/permeability, viscosity/ GOR or density of sample & bubble point. ii. Live real-time fluid analysis product and any other answer product relevant to acquisition mode. iii. Report on acquisition and processing.		

Service Code: AD-11	**3D SONIC SCANNER OR EQUIVALENT**	**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance /non-compliance**
MEASUREMENTS	i.Compressional, dipole-shear and stoneley DT. ii.**Should have at least 13 levels of receiver waveforms with at least 8 receivers at each level**. iii.Capable of recording all data in the single run and saving rig time. iv.Radial profiling capability to identify drilling induced formation damage and damage thickness. v.Acquire CBL and BCS services in the same trip. vi.Identify formation anisotropy with direction, fracture orientation for oriented perforation for increased productivity. vii.Recording of above in cased hole mode viii.Evaluation of cement bond behind casing independently while running in cased hole		
VERTICAL RESOLUTION	i.Standard <1.82m (6 ft) processing resolution for 15.24cm (6in) sampling rate. ii.High resolution <2 ft.		
TOOL DIAMETER	For open hole sizes 5-7/8" to 17 ½ ".		
ACCURACY	i.**DT:** <6.56 µs/m [2 µs/ft] or 2% up to 35.6-cm [14-in] hole size ii.**DT:** <16.40 µs/m [5 µs/ft] or 5% for >35.6-cm [14-in] hole size		
DEPTH OF INVESTIGATION	3 times borehole dia		
RANGE	i.Standard Shear slowness upto 3937 µs/m (1200 µs/ft) or more. ii.Compressional slowness <987µs/m (350 µs/ft) ii.Stoneley slowness <3937µs/m (1500 µs/ft)		

TEMPERATURE RATING	325° F minimum.		
PRESSURE RATING	18000 psi minimum.		
POST PROCESSED DATA	**Contractor has to provide following post processed data without any extra cost to company:** a) Compressional, Shear (both X & Y direction) and Stoneley slowness with integrated travel time, Vp/Vs. b) All answer products relevant to acquisition mode of service 3D sonic scanner such as Radial and Axial Profiling, Completion Plus (Dipole Radial Profiling), Fracture Analysis, Rock Mechanical Properties including young, shear and bulk modulus, poisson's ratio etc., stress analysis, evaluation of formation anisotropy, anisotropy map, Mobility & Permeability from Stoneley (also cement bonding while recorded in cased hole).		

ANNEXURE-B

BIO-DATA OF KEY PERSONNEL

PHOTO	Name: Highest Educational Qualification: Total experience (in years) in Wireline Field operations: Current Designated post:

Work experience details (employment history):

Period	Position & Company	Remarks, if any

Safety courses undertaken if any:

Year	Course Name/Description

Sign & Seal of Company representative

14 CORING, CORE HANDLING & CORE STABILIZATION SERVICES (ON OPTIONAL BASIS)

Coring Services including Supply of Coring Tools & Consumables for coring unconsolidated and shale formation in 12-1/4", 8-1/2" Hole and 5-7/8". Coring services for 5-7/8" hole size will be on contingency basis.

1. Scope of Work:

a. The successful Bidder shall provide a complete set of coring equipment for coring unconsolidated and shale formation including but not limited to Core Barrel assembly, handling tools, circulating sub on top of core barrel, core heads and coring services with all required accessories for coring in 12-1/4", 8-1/2" Hole and 5-7/8". hole sections of the wells.

b. It is the responsibility of the Bidder to plan and provide core barrels, core-heads with accessories and Coring Service Engineer / Specialist in timely manner as per requirement of the wells, in coordination with the Company so that rig operations do not suffer.

c. The Bidder shall provide one experienced Coring Service Engineer / Specialist, as and when required, for coring operations in a Drill-ship rig.

d. The Coring Service Engineer / Specialist shall have minimum cumulative experience of 3 years in carrying out coring operations and in at least 02 numbers of offshore wells.

e. The Bidder shall maintain all equipment in good operating condition.

2. Tentative Coring Programme:

The Tentative Coring Program for the initial wells is highlighted below:

Sl. No.	Operation	Qty Per Well
1	In 12-1/4˝ Hole: 9m core in single run	4
2	In 8-1/2" Hole: 9 m core in single run	2

3	In 5-7/8" Hole: 9 m core in single run (Contingency hole size)	2

Note: The quantities mentioned above are tentative and may vary based on actual requirements which will be decided nearer the time.

3. Specification of Coring Tools & Equipment:

The equipment and tools should be suitable for the anticipated temperature and pressure as given in the tender. Coring equipment provided for service should be either new or recently refurbished. In case of refurbished tools, the refurbishment should not be more than 06 (six) months old as on the original bid closing date. Detailed specifications of equipment / sensors along with technical literature / drawings, etc. indicating the features available in their system should be provided along with the techno commercial bid. The Bidder should also indicate limitations of their tools/sensors such as temperature, pressure, and discharge limitations with ability to pump LCM materials in mud loss conditions through the tools.

i) **Core Barrels to be provided as follows:**

One (01) set of 6-3/4" OD × 4" ID × 30 ft long core barrel with 8-3/8" / 8-1/2" core heads for operations in 8-1/2" hole.

One (01) set of 6-3/4" OD × 4" ID × 30 ft long core barrel with 12-1/8" / 12-1/4" core heads for operations in 12-1/4" hole.

One (01) set of 4-3/4" OD × 3" ID × 30 ft long core barrel with 5-1/2" / 5-7/8" core heads for operations in 5-7/8" hole. (Contingency hole size).

Additional back-up to be provided as required for all the above sizes to ensure uninterrupted operation. The bidder should provide a variety of core heads on consignment basis.

The core barrels should be complete with Fiber glass/Aluminum inner barrel liner system complete with end caps and clips; Fiber glass/Aluminum inner tubes shall be in

approximately 9m (30 ft) sections to suit the outer barrels. The inner tubes must be able to operate at bottom hole static temperatures of up to 230°F & 300°F for 12-1/4", 8-1/2" and 5-7/8" hole sections respectively. Complete set with core catcher, circulating sub on top, handling tools, stabilizers, safety joint and all required accessories are to be provided. The core barrels should also be equipped with suitable stabilizers according to the size of the core heads to ensure proper stabilization during coring operation and should also feature an Anti-Jamming System.

Accessories: End Caps, Clamps and Core Boxes, core handling tools, required x-over subs, etc. are to be provided. Bidders to specify all such equipment / items required for carrying out the coring services.

ii) **Core Heads:**

The Bidder shall also provide suitable PDC/Diamond core bits (for taking cores in 12-1/4", 8-1/2"and 5-7/8" hole sections) with bit breaker as per requirement and formation characteristics. The PDC / Diamond core-heads shall be suitable for medium and hard formations as per requirement at the rig.

iii) **Equipment list:**

Sl.	Description
1	Complete set of Coring Unit comprising of: i. 6-3/4" Outer barrels, 4" inner barrels c/w swivel, stabilizers. ii. Core catching equipment, all accessories & tools required during operation with sufficient back –up required for trouble free operation. iii. Handling tools and spares. iv. Required X/O sub. v. Circulating sub on top of core barrel. vi. End caps/clamps/tape. vii. Core plugging tool with core trimming tool (required one plug per core). viii. Any other material, consumable and tools required.

2	Complete set of Coring Unit comprising of: i. 4-3/4" Outer barrels, 3" inner barrels c/w swivel, stabilizers. ii. Core catching equipment, all accessories & tools required during operation with sufficient back –up required for trouble free operation. iii. Handling tools and spares. iv. Required X/O sub. v. Circulating sub on top of core barrel. vi. End caps/clamps/tape. vii. Core plugging tool with core trimming tool (required one plug per core). viii. Any other material, consumable and tools required.
3	Suitable low invasion PDC / diamond core heads (c/w bit breaker or other styles) for medium to hard formation. Bidder should decide the suitable core head after study of formation characteristics of offset wells.
4	Comprehensive core handling system plus all necessary handling tools, equipment and core barrel spares as may be required such as i. Core cradle. ii. Gypsum, resin to secure/preserve the one-meter cores in the inner tubes. iii. Foam to secure the one-meter core in the packing box to avoid damage during transportation. iv. 2-inch masking tapes. v. Red and block indelible markers. vi. Eye mask/respiratory gloves. vii. Air powered saw, fitted with guards, safety equipment. viii. Toolbox (hammers, nails etc). ix. Ratchet straps for securing core barrels to cradles. x. Wooden core boxes of 1mts length. xi. Any other material, consumable and tools required.
5	Other Equipment: i. Full inventory of spare parts and consumables for the Coring systems at the

	well site. ii. Fishing tools for any "non-standard" downhole equipment. iii. A list of available fishing equipment is mentioned elsewhere in the tender. iv. Bidder will be required to maintain stocks of equipment, consumables and accessories commensurate with a remote area operation. v. Any other tools required as per Bidder's understanding but have missed out in Sr. No. 1, 2, 3, 4 and 5.

Notes:

1. Core bits should be so selected that it can take the core of desired length (maximum 9 meters) in a single run (in medium & hard unconsolidated and shale formations) in different hole sections.
2. Tools / equipment deployed should be of the latest versions / technologies, so that the project can be completed in the shortest possible time and execution of the jobs shall be of state-of-the-art technology.
3. Coring equipment & tools shall be mobilized at site in perfect working order and Bidder must maintain the same in operational condition (without any downtime) throughout the stay at Rig site.
4. Coring equipment should be complete in all respects & in ready to use condition as & when required.
5. The Bidder should indicate any other consumables or parts required but not listed above.
6. Core has to be cut as per the advice of the Company.
7. The wells are planned to be drilled with high performance water-based and oil-based Mud system.
8. The Bidder has to make all arrangements and take necessary precautions for maximizing recovery of cores. The well bores are expected to be vertical.
9. The Bidder is to provide all the equipment, accessories and services as may be required for cutting & extraction of the cores at site.
10. The Bidder will carry out mobilization/interim remobilization and demobilization/interim demobilization of their equipment from their Kakinada

shore base.

4. Coring Engineer and Responsibilities:

1) Bidder must provide one (1) Coring Engineer as & when required by the Company on call-out basis for carrying out the coring operations at the designated wells.
2) The Coring Engineer shall have minimum three (3) years' experience of performing coring services independently in oil/gas wells and in at least 02 numbers of offshore wells as on the original bid closing date.
3) The Coring Engineer shall be responsible for (but not limited to) the following activities:
   i. Prepare Coring plan and program.
   ii. Establish co-ordination with Company's representative and rig superintendent/rig-manager of the rig and Core Analysis group if deployed in the field.
   iii. Run, maintain, and manage the Coring tools.
   iv. Cut cores and extraction of the same to the surface, Core catching.
   v. Submit the Coring report to the Company Representative at the Drilling Rig site.
   vi. Maintain adequate stock and inventory of tools, spares, and consumables at site to perform the Coring program.
   vii. Ensure availability of adequate spares for all the equipment and tools on site to carry out any repairs without downtime.
4) Bidder must provide one (1) Coring Technician as & when required by the Company on call-out basis to assist coring engineer for carrying out the coring operations at the designated wells.

5. Reporting:

A Report on completion of each coring operation and thereafter, a comprehensive well-wise report of all coring operations undertaken in a particular well consisting of the following must be submitted to the Company.

- An evaluation of the Core Bit, BHA, and their performance.
- An analysis and recommend optimum parameters for future wells.

- A detailed list of spares and tools used, and Consumables consumed in each hole section.
- A comparison of planned Vs actual tools used in each hole section.
- A detailed study on the coring problems encountered and mitigation strategies adopted.
- The Bidder will make recommendations for future coring design based on the lessons learned and its analysis.

6. Well Site Core Handling, Spectral core gamma and Core Stabilization Services:

A. These services shall include but are not limited to the following:

Core handling, marking, preparation including (cutting) into 1-metre or similar sections.

B. **Core Handling Expert:** The Bidder must provide one (1) Core handling Expert as & when required by the Company on call-out basis for carrying out the core handling, marking, cutting, stabilization, preservation, and packaging operations at the designated well.

The Core Handling Expert shall have a minimum of three 3 years' experience of performing core handling services independently in oil/gas wells as on the original bid closing date and should have successfully carried out core handling jobs in at least 3 wells.

C. **Description of Service:**

1) **Preparation:** Core catching, handling, marking, preparation (including cutting) into 1-metre or similar sections or as advised by Company.
2) **Well site Spectral core gamma:** Bidder to perform Spectral Core Gamma measurements for the client using suitable portable, pre- calibrated equipment. Hard and soft copies of the data shall be presented to the wellsite Geologist (ASCII format) at the rig site in a timely manner.
3) **Stabilization of cores:** Bidder should stabilize the cores by using foam for transportation of cores to base.

Notes:

1. The Bidder shall perform the above activities under the guidance / supervision of Company's well site Geologists.
2. The Bidder shall provide all necessary equipment, personnel & services for cutting, & extraction of core as desired by Company.
3. All handling equipment and materials required for cutting, orientation & extracting and preparation (included but not limited to core catching, handling, marking, cutting into 1-metre or similar sections) of the core samples should be readily available at respective well site.
4. The Bidder shall maintain all equipment in good operating condition.

D. **Personnel for coring**

(1) Coring Engineer
(2) Core Handling Expert
(3) Coring Technician

7. Provision for Back-up Tools & Services:

The Bidder should keep sufficient tools as back-up to ensure smooth operations. However, Company will not pay any fixed charges for such back- up tools.

8. Safety Compliance:

The Bidder shall have to comply with the applicable standards and prevailing provisions of Mines Act, 1952, OISD (Oil Industry Safety Directorate) guidelines and MoEF (Ministry of Environment and Forest) and Central/State Pollution Control Board's directives as in vogue in India.

15 SHORE BASE SERVICES

1.0 **Preamble**: This section establishes the scope and schedule for the work to be performed by the Contractor and describes the specifications, instructions, standards and other documents including the specifications/description for any materials, tools and equipment, services etc., which the Contractor shall satisfy or adhere to in the performance of the work. The services to be rendered by the successful bidder/Contractor will have to support the operations from Seaport at Kakinada. The intent is to serve the regular operational daily requirements to the field from Kakinada seaport which include but not limited to provisioning of jetty for berthing & handling offshore supply vessels, open and covered storage for material and equipment, Bunkering, Mud Plant (Mud Chemicals), Bulk Handling Plant (Cement and Additives), Potable & Drill Water, Drill Bits, well heads, various consumables etc.

OIL's yard located at Kakinada will be used for storing OCTG procured by Company separately. Bidder to provide One Number 40 Ton Crane and One Number 10 Ton Pipe Handler with qualified Operators and helpers at OIL's Yard to handle tubulars. The hiring of the 40 Ton Crane and 10 Ton Pipe Handler shall initially be for a period of 36 months with provision for an extension by a maximum of 12 months or part thereof, at Company's option, based on operational requirements, under the same rates, terms and conditions.

Hiring for the Shore Based Management services shall initially be for a period of 3 years with provision for an extension of up to 12 months or part thereof, at Company's option, based on operational requirements, under the same rates, terms and conditions.

A Shore Base facility in oilfield parlance typically includes a jetty for berthing & handling offshore supply vessels, open and covered storage for material and equipment, dry and liquid bulk handling facility including Liquid Mud Plant, Material handling and Stevedoring besides communication network & engineering facilities. This translates into a Port facility and a Shore Base Operator. The Shore Base is to be hired as a Build-Own-Operate (BOO) project. It is to be operated with the Global Best Practices of the E&P Industry and in compliance with the "Operating Standards" as brought out in international

practices. The Shore Base must acquire the required Quality Standards once they are fully operational.

Representatives of successful Service provider should be available for Kick off meeting at Kakinada, Andhra Pradesh, within 28 days from the date of issue of Letter of Award (LOA).

1. The Bidder shall be required to provide complete Shore Base Services along with equipment conforming to the specifications as specified and required to support the drilling of wells in the Indian offshore conditions.

2. The detailed requirement of the Shore Base Services with associated equipment and services is as given below.

3. Bidder shall be required to provide capable and experienced personnel as per the tender document.

4. In addition to the usual Shore Base Services (Exhibit A), the Bidder shall be required to provide the following tools, equipment and services:

- Tubular and Equipment third-party inspection services.
- Clearing and Forwarding Services (C&F) of Company and/or Company's third-party imported/re-export of tools and equipment.
- Waste Management Services for any waste generated from the drilling unit, marine vessels and shore base.
- Storage and supply of Industrial and Portable water.
- Material handling and transportation of normal and Odd Dimensional Consignments.
- Shore Base service provider will arrange the evacuation of personnel from the shore base in case of any medical emergencies.

2.0 **Contract execution methodology**: The project is to be delivered in two phases. Company may issue either single mobilization notice for both the phases or separate mobilization notice for each phase as deemed fit.

Phase-1: The Material Handling Equipment (40 Ton Crane & 10 Ton Pipe Handler) are to be made available within 3 months after the receipt of advice (mobilization notice) from the Company at OIL's yard to receive OCTG, Equipment & material from the Company's third-party service providers. (Refer Attachment-I, II and III on the Requirements, Deployment of Manpower & Material Handling Equipment (MHE).

Phase-2: Shore Base complete with all facilities and ready to operate within 5 months after the receipt of advice (mobilization notice) from the Company (2 months after Phase-1).

(Refer Attachment-I, II and III for Fully Operational Shore Base on the Deployment of Manpower & Material Handling Equipment.)

The materials to be sent offshore shall be provided by Company and will remain in the inventory of the Company. The Contractor shall be the custodian and would be responsible for its proper & safe storage and dispatch to offshore as directed by Company.

All resources mentioned in the Scope of Work are indicative for undertaking one vessel operation a day.

The details of all the Attachments are summarized as below:

Attachment-I Tentative List of Employees and their Experience

Attachment-II Requirement of Phase-1 and 2 and Typical deployment of Facility & Equipment

Attachment-III Typical deployment of MHE & Equipment for Fully Operational Shore Base Services.

Attachment-IV Submission requirements on Award of Contract (LOA)

Attachment-V Key Performance Indices

Attachment-VI Third Party Tubular Inspection

2.1 Contractor's Eligibility and Experience:

The Service may be provided by the Bidder or through its Sub-contractor.

The Service Provider should have:

i) Exclusively operated & managed at least one Shore Base for offshore E&P operations in last 07 years reckoned from original bid closing date with qualification mentioned below in (iii), and

ii) Exclusively operated & managed Shore Base Services (one or more contracts) for offshore E&P operations for 02-years duration in last 07 years reckoned from original bid closing date with qualification mentioned below in iii)

A copy of valid Contract(s) (in the form of relevant pages of the contract(s) executed showing detailed scope of work along with work order(s) or completion certificate(s) / payment certificate(s) issued by the client(s) or any other document(s) of required duration.

iii) Handling of at least 08 (eight) port calls per month (monthly average) by supply / cargo vessel for 2 years (in one or more contracts) in last 7 years reckoned from original bid closing date.

Document Required: Certification on the required Port calls by Cargo / Supply Vessels at the "Shore Base" from the Governmental / Port Authority under whose jurisdiction the Shore Base falls, duly supported with the copy(ies) of necessary documentation e.g. Port Clearance Certificate of Supply / Cargo vessels etc.

EXHIBIT-A

1.0 SCOPE OF WORK

The Scope of Work broadly covers the following but is not limited to:

1.1 Establish (design & construct) and operate a purpose-built onshore 'Shore Base' at Kakinada, Andhra Pradesh. The Shore Base has to comply with the best-in-class Global Standards. The Port facility at Kakinada Port, shall have:

- All-weather round-the-clock access to the marine vessel
- Dedicated berth of marine vessel
- Safely navigate the marine vessel in and out of the port to open sea 24 x 7 basis.
- The Port must have sufficient open space to accommodate:
    a. Closed Warehouse of minimum 1,500 Sqm area
    b. Liquid Mud Plant of minimum 2500 sqm area and Dry Bulk Plant of minimum 1500 Sqm area, preferably in proximity to jetty
    c. Supply of Drill Water and/or Potable water
    d. An office with modern amenities (furniture, Air conditioner, office appliances, Internet & printer) parking area, safe assembly area and approach roads.

1.2 To provide required Facility, Manpower & Material Handling Equipment (MHE) as referred in Attachment-I, II (Phase-1-2) and Attachment-III (Fully Operational Base).

1.3 To liaise with Regulatory/ Statutory/ Governmental/Port/Defence Authorities

1.4 Bidder must have an exhaustive and comprehensive Standard Operating Procedure (SOP) with regards to Shore Base Operation, Services, Quality and Safety.

2.0 Operational Parameters

a. To accommodate one marine vessel (~2000 DWT) a day, supporting operations to offshore drilling unit.
b. The Supply Base shall operate 24 hours (two shifts with flexi timings)
c. All efforts shall be made to provide manifest for loading at least 24 hrs before the

arrival of the vessel. However, emergency requirements need to be attended to as and when informed.

d. The Control Room (Radio/Wireless Communication) to be manned round-the-clock.
e. The indicative loading per Vessel:
f. High Flash High Speed Diesel ≈ 200~300 KL @ @≈100 KL per hour
g. Water ≈ 400~500 KL Capability to load @≈100 KL per hour
h. Dry Bulk ≈ 200~300 MT Capability to load @≈ 50 MT per hour (min)
i. Synthetic Oil Base Mud/ Formate Mud/ Brine ≈ 3000 bbl; Capability to load @≈ 400 bbl per hour
j. Deck Cargo ≈ 200~250 MT
k. HF-HSD shall be supplied by Company through a dedicated pipeline. In case, HF-HSD is supplied by Company in tankers or barges, the unloading from barge or tankers and loading into marine vessels shall be the responsibility of the Bidder/Contractor. Any charges for handling (excluding any port charges) must be included in the management fee.
l. Quick disconnect couplings as per the size/requirement of the marine vessel (normally 4" or 5") are to be supplied by the Bidder. The bulk supply connections are to be provided accordingly.
m. Jetty should have provision to supply dry and liquid bulk to marine vessel simultaneously with loading & unloading of deck cargo.
n. Turn-Round-Time (TRT) of the marine vessel has to be within 12 hours, from berthing to cast off, including security check, customs, ROB survey, port & statutory clearance, etc. subject to all the material to be loaded is available at the Jetty.

1.0 The Port:

The Port is an all-weather port with calm harbour, suitable for round-the-clock vessel operations (24/7) with ease of access through road and / or rail. The main features shall include but not limited to:

a. A dedicated continuous berth/ jetty capable for docking marine vessels of around 80 meter long.
b. Berth/ jetty should be adequately equipped with fenders to safely accommodate vessels at any tide.

c. Berth/ jetty should have sufficient light (high mast LED day light) to operate beyond dusk.
d. Adequate fire-fighting system should be in place at berth/ jetty.
e. The supply vessel with maximum (07) seven-meter draft should be able to move in & out from jetty to open sea, at all tides, all along the navigational channel, duly supported with necessary document.
f. Wharf width of around 25meter, of sufficient load bearing capacity, to accommodate staging of outbound cargo & back-loaded cargo besides positioning of suitable capacity Crane and movement of trailers/ bulkers.
g. Wharf should also have space to accommodate one 40 feet Container for use as Wharf/Jetty office/Jetty Control Room.
h. Wharf should have proper connectivity with OCTG Yard & Warehouse supporting the movement of trailers and cranes & forklifts.
i. Adequate Port Security system should be available.
j. Power supply should be obtained from the local grid; however suitable backup arrangements must be in place.
k. Contractor to use dedicated jetty crane for loading and unloading the marine vessel, if available. If the sufficient capacity jetty crane is not available, the Contractor must deploy a crane of required capacity.

4.0 Port Call by Supply Vessel

On receipt of intimation on the arrival of the vessel, the Contractor shall:

a. Liaise with Port, Customs & Immigration Authorities for fulfilling all necessary formalities for Vessel movement, in and out of port.
b. All Port charges/dues (pilotage, wharfage, Port Dues, etc.) payable must be made in advance by the Contractor to the Port Authorities. Company shall reimburse such charges at actual every 15 days against submission of all original port documents. Delays, if any, on statutory clearances/ payments must immediately be brought to the notice of Company well in advance.
c. To coordinate and arrange pilot, if required
d. To ensure availability of indicated berth.

e. To coordinate and arrange mooring gang.
f. To provide information to the vessel in case of inclement weather at the port.
g. Supply vessels are fitted with AIS Transponders and shall be tracked on round-the-clock basis.
h. To ensure all material required to be loaded on marine vessel moved to the staging area on the jetty in advance as per the plan.

5.0 Jetty Operations

The main operations are listed below, but are not limited to:

a. Contractor must ensure to conduct safety briefing before starting operations.
b. To ensure quick and safe berthing of vessels.
c. To provide safe access (gangway) to the vessel for movement of personnel.
d. To make arrangement for vessel ROB Survey through company nominated Third Party ROB surveyors immediately on arrival & at the time of departure as soon as the loading is complete or as requested by Company.
e. Loading and unloading begin immediately after ROB Survey.
f. Unloading of material including Waste (empty barrels, etc.), Trash, and Garbage and checking quantities with manifest wherever applicable.
g. To provide facility for receiving and disposal of Vessel's garbage & sludge.
h. Segregation of "back-load" material and dispatch to respective storage locations.
i. To provide dry & liquid bulk handling services.
j. Making arrangements for bulk loading, quick and safe connections, pumping & metering and disconnection.
k. To provide Mobile Silos for transferring, loading and unloading of Dry and liquid Bulk to and from marine vessels as and when required.
l. Loading and securing of Manifested material on the Vessel deck to the satisfaction of Master of the Supply Vessel.
m. Arranging deck loading as per the sequence of Vessel calls to offshore installations in consultation with the Master of the Supply Vessel.
n. To provide required material handling equipment and manpower at Wharf as brought out at Attachment-II & Attachment-III.

6.0 Warehouse & Yard Management

a. To provide Closed Warehouse (1,500 Sqm) suitably ventilated & illuminated (maximum use of daylight & LEDs for efficient use of energy) for equipment/ spares/ chemicals/ cement/ barites etc. The orientation/opening of warehouse should allow natural air draft for cleaner/ good indoor air quality.

b. There could be separate sheds for following Categories:
   i. Warehouse for Chemicals (Dry and Liquid): ≈1000 Sqm.
   ii. Warehouse for Other Items: ≈ 500 Sqm.
   iii. Area for necessary fixtures, tools & tackles for assembling downhole equipment (length ≈10-15m).

c. Warehouse must be constructed with epoxy coated (anti-skid) flooring over concrete base of necessary strength, with dedicated pathways to ensure smooth movement of MHE's.

d. Contractor must manage the Warehouse Space most optimally with high stacking racks.

e. Warehouses to have space for Inbound cargo (receipt of material, inspection & acceptance, putting on pallets & securing with shrink wrap, labelling), and Outbound cargo (putting the material in Cargo Carrying Units (CCU), securing cargo with Cargo Restraining Nets (CRN)).

f. The inbound cargo shall be palletized, shrink (if required stretch wrapped) and racked safely, systematically with easily retrievable manner.

g. Chemicals provided will be either in Dry Powder (Bags) or Liquids (Barrels/Jeri cans).

h. Storage of Chemicals must be in compliance to its Material Safety Data Sheet (MSDS) and must have all requisite provisions for containing/ responding to hazards in case of any eventuality.

i. The Plastic/ Fiber pallets (reusable) are to be used for storing material which is to be moved within the Supply Base and Wooden Pallets would be used only for the materials which are to be sent to Offshore.

j. For outbound cargo, secured with cargo restraining net, latching & locking of CCUs with Seal (uniquely numbered), must be ensured at the warehouse before its loading on to trailers for onward dispatch to wharf so that it must not inadvertently open

during handling and transportation.

k. The Contractor should have software for inventory management along with the provision of tracking the location & quantities.

l. Warehouse should be fitted with necessary number of certified fire extinguishers, alarm bells and manual call points.

m. The warehouse should be suitably equipped with eyewash and safety showers.

n. To provide required material handling equipment and manpower at warehouse as brought out at Attachment-I, II and Attachment-III.

7.0 At OIL's OCTG Yard

a. All the tubulars shall be visually inspected on arrival in the OIL's yard. The damaged ones are to be reported, segregated and stacked separately.

b. Tubulars shall be dispatched to offshore in "pre slung" format, with appropriate tag lines as required. (Slings to be provided by Contractor)

c. Casing joints to be drifted, measured & marked and threads to be cleaned and lubricated prior to dispatch to offshore. Appropriate Thread Dope to be provided by the Contractor.

d. All specialty tubular assemblies, tubing hangers, liner hangers and other drilling tools, etc. should be properly secured.

e. To provide required material handling equipment and manpower at OIL's Yard as brought out at Attachment-I, II and Attachment-III.

f. To earmark an exclusive area for tubular inspection within Open yard with necessary fixtures.

g. Backloaded tubulars shall be inspected through TPI on the advice of Company.

h. The Contractor shall take the material into stock/inventory immediately on supply by Company/Company's Suppliers.

i. The initial supplies to Shore Base shall be made from Company's/Company's Suppliers Base either through road/ sea and simultaneously the work orders would be amended for direct supplies from vendors to the Base.

j. The Contractor shall take custody of the material supplied and safely store before its dispatch to offshore.

k. All receipts shall be communicated to Company on a daily basis.

l. All the dispatched / back-load unused material shall also be conveyed to Company on daily basis.

m. Contractor should update the inventory regularly and should provide the status on weekly basis to Company.

n. All inventory is to be maintained and managed by the end of contract.

o. The Contractor shall carry out physical verification of inventory at least once in a month and report variations, if any, and carry out reconciliation with Company.

p. To provide all necessary consumables like Shrink/Stretch Wrap, Slings, Pallets, dunnage, Nylon ropes, Cargo Restraining Nets etc. in sufficient quantities. Contractor shall replace the damaged, broken, expired and consumed materials at no extra cost from time to time.

q. The initial stock shall be built up on the Contractor's experience which shall then be regulated through actual consumption on regular basis (the cost of which is to be borne by the contractor). All visual inspection shall be properly recorded and documented.

r. All consumables mentioned above should undergo regular visual inspection and undergo load test inspection, wherever applicable, every six months or earlier if required (the cost of which is to be borne by the Contractor). All visual and load test inspections should be properly recorded and documented.

s. All consumables provided by the Contractor must come with proper test certificates, wherever applicable.

8.0 Bulk Handling

a) To Provide a Dry Bulk Handling Plant (Capacity 450 MT, 9 Silos of 50 MT each with a covered area for bag cutting pod and two mixers) in proximity to Jetty due to pressure restrictions on transfer of dry bulk in the fluidized mode.

b) The capacities include Cement (150 MT), Barite (150 MT), Bentonite (50 MT) and Blended Cement (100 MT). The minimum dry bulk loading capacity into silos should be 150 MT per day.

c) Plant is to be designed, constructed, operated & maintained by the contractor.

d) Contractor shall provide all Plant utilities including sufficient light (high rise LED day light) to operate even beyond sunset hours.

e) Loading of dry bulk cargo is to be made simultaneously while unloading/loading of deck cargo.

f) Contractor can deploy suitable capacity Mobile Bulkers for loading without compromising on vessel Turn-Round-Time of 12 hrs.

g) The plant area is expected to be around 1000 Sqm.

h) To provide required material handling equipment and manpower at Dry Bulk Plant as brought out at Attachment-III.

Following is the list of items to be provided for Bulk Handling Plant (BHP)

(i) Area 1500 sq. meter or capacity to store 800MT (16000sx) of cement.

(ii) 50 Cu. Ft Cutting Pod - 2 nos

(iii) 325 CFM, 100psi (with unloader) Air Compressors -2 nos

(iv) Air Dryer (Hydrocarbon) - 2nos

(v) Air Dryer (Moisture) - 2 nos

(vi) Air Receiver Tank of 52 cu. Ft - 2nos

(vii) Rock Catchers - 6nos

(viii) Dust Collectors — 2nos

(ix) WBB (Way Batch Blender) - 1nos

(x) Mobile Silos (banana trucks) - 4 nos

(xi) 325 CFM, 100psi (with unloader) Air Compressors for Pumping to Supply Vessels – nos

(xii) Manpower (as and when required) to operate the Bulk Plant

Liquid mud plant

Rental LTSOBM Liquid Mud plant

a) Contractor shall provide on rental basis a Liquid Mud plant and services for operation and maintenance of Liquid Mud plant capable of maintaining and storing Base Oil / LTSOBM / Brine with a capacity of 12000bbl (approx.).

b) Contractor shall be responsible for the maintenance and 24-hour operation of the Liquid Mud plant including all equipment's installed in Liquid Mud plant, Supply Base.

c) Contractor shall be responsible for ascertaining that all the equipment of liquid mud plant always remains in proper operating condition.

d) LTSOBM Liquid Mud plant shall also supply LTSOBM, Base Oil and Brines to other OIL's rigs as per operational requirement and receive / deliver material from/to the OIL Liquid Drilling mud Plant at Kakinada as and when required.

e) Contractor shall deploy experienced working manpower at LTSOBM-LMP and are to be provided with all personal safety kits suitable for LTSOBM and Brine handling.

f) Liquid Mud plant shall have the basic firefighting systems all around the tank System, mixing area, centrifuge area, brine tank system, waste management area & in the laboratory. The other areas shall be covered by the General firefighting aids like Sand, water, dry Powder, Canister based Carbon dioxide system, and Foam based firefighting aids which shall include A, B, C, D E, F class system.

g) QA/QC & Inspection as per acceptable ASME & AWE design code: Inspection of the Liquid Mud plant has to be carried out by Third party Inspection Agency like DNV or equivalent / Govt. of India's approved inspection agency. Subsequently, the Liquid Mud plant shall be jointly inspected by the Contractor's representative and OIL's representative prior to acceptance for use.

h) Contractor shall submit the following to OIL for approval prior to the commencement Date:

- Preventive maintenance schedule and plan for all Contractors' equipment.
- Bulk handling guidelines.
- Emergency procedures.
- Contractor's safety manual and procedures.
- Liquid Mud Plant design should comply safety norms for structural and functional parameters and should pass QA/QC test issued by third party e.g., DNV.

Liquid Mud plant in the port will need approximately 2500 sq. meter open space to accommodate following: -

(i) Base Oil Storage Tanks – 10 nos (Each 430 BBL)

(ii) Brine storage Tanks – 12 nos (Each 430 BBl)

(iii) Brine Mixing tanks – 6 nos (Each 230 BBL)

(iv) Mud Preparations Tanks – 6 nos (Each 230 BBL)

(v) Cutting Hoppers – 2nos

(vi) Mobile trucks to transport the fluid and pump to the supply vessels - 4 nos

(vii) Manpower to operate the Mud Plant

9.0 TO PROVIDE BUNKERING FACILITY FOR HF-HSD

a) HF-HSD shall be provided by Company. Arrangement to load on the supply vessel to be done by the contractor.

b) The transportation and loading into vessels shall be accounted through a dedicated pipeline with certified Volume Metering System duly calibrated on bi-annual basis.

c) HF-HSD quality should be jointly checked with Vessel Master.

10.0 To provide Drill and potable water for supply to offshore facilities and use in Shore Base

a) To provide Drill & Potable water for supply to offshore facilities and for use in Shore Base.

b) On average around 200~250 KL Drill Water and 100~150 KL potable shall be supplied on the vessel besides the routine requirements of Shore Base.

c) The water consumption shall be accounted through Volume Metering System duly calibrated on bi-annual basis.

d) The Water quality shall be jointly checked periodically. Potable water must comply Indian Standard Specifications for Drinking Water: 10500 - 1983.

10.0 To provide a handling facility for explosives/radio-active material and other Dangerous goods (IMDG) cargo, if required

a) To provide handling facility for explosives/ radio-active material and other Dangerous goods (IMDG) cargo, if required

b) The operations shall be handled by the Warehouse Crew in the presence and supervision of the service provider.

11.0 Material Handling Equipment

e) To provide duly certified well maintained Material Handling Equipment (MHE) along with Fuel Oil, Lubricants, qualified Operators, and helpers. Contractor shall be responsible for maintaining MHEs to ensure round-the-clock availability. The deployment for Phase-1 and Phase-2 shall be governed as brought out at Attachment-II and Attachment-III respectively. The Contactor should mobilize MHEs as mentioned below with valid documentation:

(i) Crane (01) one at OIL's OCTG yard (Rough Terrain Hydraulic Boom Crane capacity 40 ton) in compliance to BS EN 13000 and 13001. The open yard crane may be used as stand-by to cater to any exigencies at wharf.

(ii) Forklifts (2 Nos of 5 Tons capacity)

(iii) Pipe Handler e.g. Hydra or F15 (1 No, SWL minimum 10 Ton) at OIL's OCTG Yard to handle tubular.

(iv) Trailers double axel (3 Nos), Capacities 20 MT High Flat Bed, 40' long. (02 Nos Rental + 1 No Callout)

(v) Arrange MHE at other Company's designated locations other than the Shore Base, if required.

b. Contractors must ensure that operators of MHEs are having all relevant training and possess license for driving heavy motor vehicles. Moreover, Contractor must also ensure that all the MHEs deployed have valid Vehicle Registration Certificate and Insurance throughout the contract period. The necessary documents need to be submitted to company for review of the award of the contract.

c. Contractors should ensure regular preventive maintenance of MHEs. Provision of Annual Maintenance Contracts (AMCs) with OEMs is required to ensure round-the-clock availability of equipment.

d. Contractors shall replace the equipment if it is ascertained that it is not giving satisfactory performance or has a major breakdown.

e. Contractor to undertake preventive maintenance of equipment during idle times with the prior approval of Company.

f. The relevant documents like R.C. Book, Fitness certificate, Insurance, Driving Licenses, Emission test certificate and all other statutorily required documents shall be available at all times.

g. The personnel handling / driving the material handling equipment i.e Crane, Tricks, Forklift, trailers must be experienced, certified / licensed.

h. Effective Audio-Visual alarm shall be provided on the rear, to be actuated automatically whenever the vehicles are being reversed & alarm should be audible at a distance of 10 meters.

i. The following documents must be provided during the commencement of work and be available at all times on board vehicle are required at the time of reporting:

   i. Registration Book & Road Tax Permit
   ii. Valid Vehicle Insurance
   iii. Valid Pollution Under Control Certificate
   iv. Valid HMV Driving License for all operators / drivers.
   v. Last Service report at authorized service station with date & Km recorded.
   vi. Test Certificate of each Fire Extinguisher
   vii. First Aid Box

j. The Contractor shall provide all equipment absolutely in a proper working condition. If any equipment develops any defect while on duty or faces breakdown the Contractor shall immediately replace it with another equipment of same compatibility

12.0 Cargo Carrying Units/ Cargo Handling Equipment

12.1 The Contractor shall provide sufficient numbers and type of CCUs/ CHUs at all the times to support Company's operations as per the workload mentioned earlier. The minimum types and quantities to be provided are mentioned below.

   i. 8' Mini Container (5)
   ii. 10' Container (5)
   iii. 10' open top or Half Height Container (10)
   iv. 20' open top or Half Height Container (5)
   v. 20' Basket (5)
   vi. 40' Basket (1)
   vii. 20' Waste Skips (5)
   viii. 6' SOBM cutting skips (30)

12.2 The Contractor must ensure that CCUs / CHEs including lifting attachments, latches, slings etc. are maintained in compliance to DNV Standard 2.7-1 or EN 12079 requirements or approved by a competent authority to be complying

to DNV Standard 2.7-1 or EN 12079.

12.3 CCUs / CHEs which will be utilized for transportation of dangerous goods (IMDG) shall have provision for tracking through Radio Frequency Identification (RFID). This will help with their timely retrievals from offshore locations. Contractors should make requisite provision for tracking CCUs/CHEs.

12.4 The deployment shall be in Phase-2 only as brought out at Attachment-IIand III.

13.0 Supply Base Management

a. Administration & Management of the Supply Base

1. The Contractor must ensure efficient storage and uninterrupted bi-way flow of goods and information to and from its Base to Company, in safe and secured manner.
2. The Contractor shall make all necessary arrangements as specified in scope of work in terms of man, machine, other resources etc. to undertake efficient & safe operations.
3. The Insurance of assets and employees of Contractors, in Supply Base shall be under the scope of the Contractor. Company would insure its supplies separately.
4. The Performance of Contractor shall be assessed in accordance to the Key Performance Indices (KPIs) as brought out at Attachment-V. Contractor shall report KPIs to Company with supporting documents for Performance Appraisals.
5. Contractor shall submit daily progress report, along with stocks of dry & liquid bulk, of the activities to Company.
6. The Contractor must maintain all necessary documentation & records.
7. Standard Operating Procedures prepared by the contractor and accepted by Company shall be the guiding principles for Shore Base Operations.

B. To provide adequate Qualified, Trained & Experienced Manpower

1. The Contractor shall provide required number of qualified, trained and experienced manpower to cater for one vessel operation a day. An indicative deployment is placed at Attachment-I and Attachment-II.
2. The Contractor shall take approval for the key personnel such as Base Manager, HSSE

Manager, Material & Inventory Manager and Supervisors from the company on award of Contract.

3. The Contractor must ensure that their supervisors and above hierarchical manpower are duly trained in HSE aspects of the work.
4. The Contractor shall provide initial health check-up document of the deployed manpower and thereafter with biennial periodicity.
5. The Contractor must maintain proper discipline in the Shore Base.
6. The Contractor may be advised to replace any person on the sole discretion of Company.

C. To Provide Personal Protective Equipment (PPE)

1. Contractor shall provide all its personnel with adequate and quality PPEs including coverall, safety boots/shoes, safety goggles, hand gloves, chemicals and lubricants apron, face mask, safety helmet etc. and ensure strict compliance with their usage. Jetty crew must also wear elective jackets.
2. All the visitors at the Shore Base shall also be provided with PPEs before their entry into the Base including Safety Briefing.
3. The Contractor should have sufficient stock of PPE at Shore base.
4. Contractor to provide Eye Wash station and shower at the bulking, warehouse.

D. Liaison with Regulatory/ Statutory/ Governmental Authorities

1. The Contractor must comply with all the regulatory provisions of Local and/ or Central governmental agencies.
2. The Contractor shall obtain and maintain all requisite & necessary licenses, documents, certificates, approvals and permissions from State/ Central Government, as deemed required for the operation of the supply base.
3. The Contractor shall indemnify Company against all relevant Act, Rules, Regulations, Notification and Circular of Government of India/ State Government, which principally govern operations of the Shore Base.

E. Coordination with Company

1. The Contractor shall be coordinating with Company's Representative on the

movement of cargo to and from offshore.

2. The manifest for outbound cargo shall be informed approximately 24 hrs before the arrival of Marine Vessel. However, the urgent requirement shall have to be met on a shorter notice.
3. The Contractor must ensure seamless coordination with Company to understand the requirement and ensure timely compliances.
4. The Contractor is expected to provide recommendations to Company on resources and operational optimization for improving the efficiency of the Shore Base.

F. Coordination with the Suppliers of Company on tracking deliveries

The Contractor shall develop SOP for seamless coordination with companies' vendors for deliver the scope below: -

1. Contractors shall be provided with the dispatch documents for orders placed by Company for various items to be delivered at the Shore Base. The Contractor is required to ensure proper coordination with these vendors for the timely receipt of material.
2. Contractor shall undertake all formalities as required for entry of Supplies (Trucks/ Trailor's) into the Shore Base.
3. Contractor shall deploy the requisite manpower & equipment for safe unloading of material with minimum waiting.

G. Coordination with Service Providers/ Contractors of Company for managing the required space for handling their material/ equipment to & fro Offshore

1. The Contractor shall coordinate and facilitate the Service providers/ Contractors of Company to achieve efficient and safe transportation of their material to and from offshore in addition to providing transit space (say for around 48 hours).

H. To provide suitable Medical/ Paramedic/ Ambulance Services with lifesaving gadgets

1. The Contractor should have MOU with Medical Support Services including an ALS ambulance with driver and a qualified & trained paramedic for any medical emergencies.

2. The ambulance driver must be conversant with necessary driving rules & regulations applicable for attending to medical emergencies.
3. The Contractor must have a tie-up with a nearby Major Hospital facility which shall become part of the Emergency Response Plan (ERP).
4. The Contractor shall maintain and replenish emergency and first-aid medical kits at all the crucial places and at all times.

14.0 Facility Management

A. To provide House Keeping Services for the proper upkeep of entire Shore Base

1. To ensure proper maintenance and Electrical equipment & appliances, Lights & fixtures etc.
2. To ensure maintenance of Office Equipment, IT & Communication Infrastructure
3. To ensure Pest Control, Plumbing, Carpentry, Electrical, Masonry work, Grass cutting etc. to maintain a clean and safe working area.
4. To ensure stock replenishment to upkeep Shore Base operating efficiently
5. The Contractor must ensure proper upkeep of sanitation facilities at all times.

B. To provide adequate Fire Fighting Services

1. The facility (Bulk handling plant, Warehouse & offices) has to be risk audited for fire hazard and suitable fire-fighting equipment/ measures must be in place & maintained across the facility.
2. A mobile Fire Tender should be made available within emergency response time.
3. Contractors shall ensure periodic fire drills which shall form part of Key Performance Indices.

C. To Provide Security Services

1. All incoming material needs to be subjected to handheld “Cargo Scanner” at the entry point of the Shore Base for Security reasons.
2. Contractors must maintain a continuous perimeter fence with adequate lighting and guarded by patrolling the area, as a deterrent for trespassers. (Wearhouse, Bulking area & open yard)

3. Monitor movement of personnel, material and keeping a vigil on any untoward incident at all venerable places at the Control Room which shall be manned on round-the-clock basis.
4. These Security measures shall be in addition to the provisions of the Port, being International Ship and Port Facility (ISPS) compliant.
5. The Contractor must ensure maintenance of Jetty/ Wharf always including fenders etc.
6. The Contractor must ensure proper Maintenance and Certification of all Material Handling Equipment including Pallets, Slings etc.at all the time.

D. To ensure Maintenance of Bulk Handling Plants

a) All Pollution Control measures (containing/ responding) must be in place.
b) To provide suitable Air-Conditioned Office to Company including space for meeting
c) The Contractor to provide separate furnished office space of 50 to 75 Sqm to Company's Officers with all required utilities like Internet, and Communication etc.

15.0 Waste & Waste Management

a) To provide quick and efficient disposal of Trash/ Garbage as received in Waste Skips from Offshore in compliance to local Regulatory requirements.
b) To provide disposal receipt in compliance to IMO regulations for Vessel's garbage & sludge.
c) To be liable for the storage, handling, transportation (on land), manifest and disposal through authorised agency of any spent or used chemicals or other hazardous waste.
d) The Contractor shall dispose all other waste material appropriately.
e) Disposal of synthetic oil-based cutting will responsibility of the contractor. The disposal of these cutting shall be carried out with latest CPCB guidelines issued by Ministry of Environment, Forest & Climate change, Government of India and with certified vendor.

16.0 Call Out Services

To provide following Services as and when advised for:

i. Engineering & Workshop
ii. Third Party Tubular Inspection – Ref Attachment VI for SOW

17.0 Penalties

The penalties shall be regulated as brought out hereunder:

i. Non availability of manpower/ material handling equipment/ CCUs/ Bulk Handling Services etc. each day, beyond permissible limits, shall attract penalty of double their day rate arrived at prorate basis of monthly rates, even if it had not affected the departure of the vessel within TRT of 12 hours.
ii. Departure of Vessel beyond TRT of 12 hours, on account of Contractor, shall attract penalty of one day rate of Shore Base in totality arrived at on pro-rata basis of monthly rates.

Attachment-I

Employees List with Experience

SL	Category	Responsibility/ Experience	Nos
1	Base Manager	Shore Base In-charge / 15 years - (5 years as Base Manager in oil & gas industry)	1
2	Materials & Inventory Executive (Warehouse, Open Yards, Jetty & Backload)	To assist Materials & Inventory Management /2-3 years in oil & gas industry.	1
3	Maintenance Executive	Assisting Maintenance /2-3 years	1
4	HSE Manager	To ensure compliance with all statutory & regulatory requirements. Coordination & liaison with regulatory authorities. OPITO / LEEA Certified / 5 years (3 years as HSE In-charge)	1
5	Shipping/C&F Coordinators	To Coordinate & Liaise with Customs, Port Authorities/2- 3 years	1
6	Supervisors (Warehouse, Open Yards, Jetty & Backload, Dry/Liquid Bulk)	Responsible for managing respective yards. OPITO/ LEEA Certified 5 years (2 years as Supervisors in oil & gas industry)	1
7	Deck Foreman	At Jetty for ensuring proper loading of Deck Cargo / 3 years in oil & gas industry. OPITO/ LEEA Certified	1

8	Roustabouts/labour (Warehouse x 2, Open Yards, Jetty, Waste Yard, & Dry Bulk Plant	OPITO/ LEEA Certified	8 x 2 shifts of 12 hrs
9	Radio Officer	To coordinate & liaise with Vessels Company. GMDSS Certification holder/2-3 years	2 (12 hr shift)
10	Office Assistants	General common assistance	1

Note: Experience is required either at Port/Shipping Sector or E&P Shore Base Services

Attachment-II

Shore Base Requirement

SL	Description of Services	Phase	Requirement
1	**Dedicated Berth One**	2	One
2	**Open Storage Yards with concrete / hardened surfaces & fenced**	1	
2.1	OCTG Pipe Yard +200 sq.m warehouse	1	At OIL's OCTG Yard
2.2	Other heavy equipment	2	
2.3	Tubular Inspection with necessary fixtures	2	
3	**Closed Warehouse anti- skid flooring, Suitably Ventilated with Racks**	2	1500 Sqm
3.1	Equipment/Spares	2	
3.2	Chemicals, Cement/ Barites, Bentonite etc	2	
3.3	Warehouse with movable racks for Rubberized items at Mezzanine above workshop	2	
3.4	Workshop with fixtures	2	
4	**Material Handling Equipment (including POL, Crew, Maintenance etc.)**	1	As brought out within Attachment-III
5	**Shore Base Management**	2	As per SOW
6	**Personnel**	1	As brought out within Attachment-I & II
7	**Facility Management Services**	1	As per SOW
8	**Bulk Handling HF-HSD**	2	
8.1	Supplies by Company through tankers/barge Pumping from	2	

	tanker/barge to Storage Tan/vessel		
9	**Bulk Handling dry/ Liquid, Brine etc. (Chemicals by Company under Mud Services Contract)**	2	
9.1	Dry Bulk Handling	2	As per SOW
9.2	Storage for Base Oil/ SOBM	2	As per SOW

The phases indicated above are tentative and may vary depending upon operational requirement.

Attachment-III

Shore Base Requirement

SL	Category	Phase	Quantity
1	Tyre Mounter Hydraulic Crane telescopic boom SWL minimum 40T	1	1
2	Pipe Handler hydraulic boom tyre mounted Hydra/F15 SWL minimum 10T	1	1
3	Hydraulic Tyre mounted SWL 5T forklift	2	2
4	Shrink Wrapping Machine (complete with shrink wraps)	2	1
5	Double Axle, 40 feet long, 20T flatbed trailer	1	02 (Rental)+1 on Call out
6	Cargo Carrying Unit (CCUs)	2	As per the SOW

*The phases indicated above are tentative and may vary depending upon operational requirement.

Note – All above MHEs to have qualified operators with helpers and inclusive of fuel, water and lubricant

Attachment-IV

Submissions On Award of Contract

1. Activity-wise schedule for establishing the Shore Base indicating readiness of receiving the material in Tubular Yard & Warehouse by the end of 4th month from Mobilization Notice and ready for full operations by the end of 5th month from Mobilization Notice. Submission within a fortnight of Mobilization Notice.
2. To provide Layout & design of the Warehouse, Tubular Yard & Base Office within a month for approval.
3. To provide Layout and Pipe & Instrumentation design of Dry Bulk Plant indicating agencies for Construction with their credentials within a month for approval.
4. To submit the Organogram with Responsibility Matrix within two months of the Mobilization Notice.
5. To submit CVs of Key Executives within two months from Mobilization Notice for approval
6. Standard Operating Procedures duly vetted by TPI within three months from Mobilization Notice for acceptance of Company

7. Warehouse (Receiving, Inspecting, Palletising, Securing, Racking, Putting in CCUs)

   i OCTG Yard (Receiving, Inspecting, Segregating (if required), Storage, Bundle-Slinging)
   ii Lifting Operations (Pallets, Pallet Stackers, Crane, Forklift, CCUs)
   iii Wharf (Loading, Securing, Unsecuring, Unloading)
   iv Inventory Management
   v Liquid Mud Plant: Brine & Formate Mud (Operations including loading into/unloading from the Supply Vessel & Transferring from and to Liquid Mud Plant.
   vi Dry Bulk Plant (Operations including loading into the Supply Vessel, transferring & Maintenance)
   vii Bunkering of HF-HSD (Receipt, Storage, Loading into Vessel, Quality Assurance)
   viii HSE
   ix Pollution and Combating Tier-1 Oil Spill in the sea
   x Fire and Security

xi Medical Emergency

xii Waste Management

xiii Material Disposal

xiv Handling of IMDG Cargo

xv Pollution Control

xvi Emergency Preparedness Plan

8. To indicate agencies for providing call-out services within three months of the Mobilization Notice. CVs of TPI Surveyors are to be approved by the Company before their deployment.

Attachment-V

Key Performance Indices (KPIs)

Fully Operational Supply Base

1. Availability of dedicated berth Yes/ No

2. Turnaround Time (TRT) of the Supply Vessel within 12 hours Yes/ No

3. Availability of Certified Material Handling Equipment Yes/ No

   a. Cranes,

   b. Forklift,

   c. Trailers,

   d. CCUs,

   e. Shrink Wrapping Machine

4. Availability of Bulk Handling Services Yes/ No

a. Liquid Mud Plant
b. Dry Bulk Plant
c. HF-HSD
d. Pot Water

5. Availability of approved manpower (On daily basis/ Muster) with PPE Yes/ No

6. Availability & Management of Warehouse with all fixtures (1500 Sqm) Yes/ No

7. Availability & Management of Tubular Yard with all fixtures (10,000 Sqm) Yes/ No

8. Availability of all necessary consumables Yes/ No

9. Quality of housekeeping General Cleanliness Yes/ No

10. Material & Equipment at designated place Yes/ No

11. Availability of all critical services and equipment. Yes/ No

a. Fire Fighting
b. IT
c. Medical
d. Security

12. Compliance to all Statutory Requirements with validities Yes/ No

13. Inventory Management - No mismatch Yes/ No

14. Availability of sufficient CCU's as per HSE standards Yes/No

Note:

1. Reporting on KPIs needs to be supported with documentary evidence.

2. KPIs need to be filled on daily basis and jointly signed by Company Base Manager & Contractor Base Manager.

Attachment-VI

Third Party Tubular Inspection

A. Scope of Work for cleaning and inspection of tubular shall include but not limited to the following:

A.1. Cleaning & inspection of tubular:

1. All the pipes will be laid in a single layer on a suitable stand and visually inspected by rolling all around.

2. Checking thread gauge for damaged threads of tubular, if any.

3. Thread protectors of both ends (i.e. box & pin) of tubular will be checked visually. Checking internal diameter of tubular, all through using Go-NoGo gauge.

4. Thread compound status (good, dry, requires to be replaced) shall be checked. The thread of pin & coupling will be cleaned with Degreaser/solvent & wire brushed if required. (nonmetallic)

5. Internal cleaning through a rotary brush will be used to remove the internal scale.

6. External and internal full-length coating with suitable compound.

7. The contractor shall ensure that all tubular of the same size, grade, thread & PPF must be stored together.

8. Ensuring that thread protectors of good quality are installed on pin & box thread connections in accordance with API-5CT of all usable tubular. Protectors should cover all threads & must be made up tightly. (In case of non-availability and broken protectors it should be covered with plastic)

9. Contractor will categorically mention the reason for repairing along with the recommendation for reparable tubular. The recommended service/treatment shall have Company concurrence.

10. Contractor shall paint stencil identification marking in yellow paint on the outside surface of each length of the Tubulars which are 'Fit for the Purpose' with the following marking sequence in accordance with API NO 5CT specifications:

- Size in Inches
- Weight in PPF
- Grade
- Thread Type
- Length in Meters (with 2 decimals)

For example- "13 5/8, 88.2ppf P110 VAM TOP SC 80 12.02m"

11. Colour of bands for tubular & coupling (either entire coupling or bands) shall be done as per international Oil & Gas industry standards / API 5CT.

12. Tubulars which are "Unfit for purpose" shall be clearly marked with red paint and contractor to state the reason for damage.

13. Contractor will ensure restacking of all Tubular on Pipe Bays and bundling using steel strap as per instruction of Company representative.

14. After inspection Contractor will use the appropriate thread compound before making up protectors.

15. Thread compound to be provided by the Contractor.

16. Contractor shall adhere Company's HSE management system for carrying out the SoW.

A.2. Cleaning of Internal & External Surfaces:

All material shall be internally and externally cleaned with any of the methods outlined in the following paragraphs of this specification.

• High-pressure water jetting to be carried out with both the pin and box end protectors removed and cleaned at the same time.

- An air compressor with sufficient capacity shall be used to blow out the excess water from the bore and the box end threads of the tube from the box end to the pin end.

- After removing the scale with a Power wire brush (non-metallic), the identifying marks shall be removed from the exterior and it is imperative that each pipe shall be identified with outside diameter, Ibs/ft, grade, threaded connection and date of cleaning.

A.3. Visual Thread Inspection:

Remove all thread protectors. Clean protectors thoroughly and stack them in a proper manner, away from the immediate work area. The pipe shall be handled in such a manner that the exposed threads do not get damaged during this inspection process. Using a suitable cleaning substance, clean all exposed threads ensuring that no thread compound or cleaning substance is left on the threads.

It is necessary to blow out the coupling threads using compressed air to prevent the pooling of the cleaning substance at the base of the coupling. Slowly roll each pipe 1½ revolutions whilst observing the external threads and seal (dependent on connection) looking for as a minimum:

- Metal seal surface integrity, (corrosion, pitting etc.)
- Out of roundness,
- Excessive galling or wear,
- Dents or mashed areas,
- Excessive pitting,
- Burrs, Tears, Cuts, shoulders full crested threads, Longitudinal cuts and scratches,
- Loose Couplings, (ID)
- Presence of serious wireline damage (ID)
- Other, not listed above.

Thread compounds shall be applied, and protectors reinstalled. Use storage thread compound. This shall be applied in order to prevent corrosion, pitting, etc. This compound shall conform to the requirements set forth in API RP 5A 3 Bulletin.

All threads shall be free from water residue or any other contaminants prior to any thread compound is applied.

Note 1: Dilution of thread compound is strictly prohibited. Thread protectors shall be properly made up to eliminate any water ingress on the threaded connections.

Note 2: Storage period shall be considered as approximately 1 year. Clean and reinstall thread protectors on all connections including rejects. Protectors shall be made up to their full length and tightened to prevent loosening. All pipes shall be free from all dirt, mud, thread compounds or any other substance, which may affect the coating from adhering to the pipe surface. The coating shall cover the entire surface of the tube with no uncoated areas being acceptable.

A.4. Marking:

There should be no confusion between the procedure for segregation and qualifying OCTG (Tubing & Casing). Marking philosophy for damaged materials shall be followed in the sequence as mentioned below:

- Size of the material

- Type of damage

- Serial Number The contractor may suggest any other marking philosophy as per international standards, which will be reviewed and approved by the Company.

A.5. Handling

1. In bundles using the appropriate slings, before placing them individually on the racks with non-metallic slings. Do not use steel wire slings as these may affect pipe performance during service.

2. Do not use steel hooks.

3. Use crowbars made of wood rather than steel, or other non-metallic soft material to move this type of pipe.

4. Take all precautions to prevent aggressive contact with carbon steel.

5. If damage has been caused to the pipe or connections, the pipe should be clearly identified/labelled and set aside for further examination. Only move the pipe when the correct thread protectors have been securely installed. Ensure all relevant precautions are taken to avoid damage to either pipe body or connections.

A.6. Applicable Standards:

- API RP5B1 Recommended Practice for Thread Inspection on Casing, Tubing and Line Pipe
- API 5A3 Bulletin on Thread Compound for Casing, Tubing and Line Pipe

16 MARINE LOGISTICS SERVICES

1. SCOPE OF WORK

The Drilling Unit will be DP-3 Drillship rig operating in ultra deepwater depths (approx. 3000m). The Company plans to use OSV/PSV for supply of various drilling material, tools and supplies to support the drilling operations.

Two (2) number of Vessels per rig with advanced hull designs that minimize fuel consumption are to be provided. Detailed vessel specifications are in the table in the next section.

The Bidder is to identify any specification or design feature for which his equipment does not satisfy or fully comply. Bidder is also to point out any other features and benefits of their system that are not mentioned below.

The vintage of the Vessels offered shall not be more than 20 years old from the original bid closing date.

For each vessel offered, the Bidder shall complete the "Vessel Specification Sheet" mentioned separately in this section.

Vessel duties will include, but not be restricted to the following:

a. Provide offshore supply (men and material) services to Drillship Drilling Unit.
b. The vessels shall be available for offshore work round the clock, 24 hours a day, during the term of contract and shall be utilized up to its full load capacity and deck space
c. To provide surveillance, safety and rescue support to offshore Drilling Units and other support vessels.
d. To carry out pollution control operation
e. To provide a medical facility within the capabilities of the vessel
f. To accommodate additional personnel including rescued personnel as and when required
g. To carry out standby duty for helicopter operations

h. To carry out any other services requested by the Company within the capability of the vessel.

All Marine Operations must be carried out per the internationally accepted good and safe practices.

Bidder to specify and confirm no major scheduled dry docking for inspection or maintenance would fall within the contract period.

The Company will have the right to inspect or hire a third-party company to inspect the vessel at its current location, before mobilization.

2. CURRENT LOCATION, AVAILABILITY AND MOBILISATION TIME

Current location of the vessel	
Estimated date of termination of current contract	
Estimated mobilization time	

3. DESIGN AND OPERATING CRITERIA

The design and operating criteria of the marine vessel(s) offered should be submitted along with the unpriced bid.

(i) The Contractor shall provide Marine Vessel(s) conforming to the broad technical specifications as mentioned in the tender document along with Personnel.

(ii) The bidders should offer only Serviceable Marine Vessel(s).

(iii) Marine logistics service will comprise of large offshore supply vessels, with deck areas of at least 500 square meters. The vintage of the Offshore Supply Vessel(s) offered shall not be more than 20 years old. The successful Bidder to submit documentary evidence prior to mobilization of the vessel.

Note:

(i) Contractor will be allowed flexibility to change the Marine vessel(s) offered with those available later for mobilization, with prior approval of OIL, without changes in the

quoted day rates, if any of the proposed vessel(s) become unavailable before the start of operations/project.

(ii) The replacement vessel offered by the Contractor shall be of same or of higher specifications.

(iii) The idling period of the offered Marine Vessel(s) should not be more than 3 years i.e. the offered Marine Vessel(s) should have carried out operations on minimum one well / one project during the last 3 years. The successful bidder to submit documentary evidence towards operation of the Marine Vessel prior to mobilization of the vessel. The complete details of the last operator, the last contract taken up and the period during which the offered Marine Vessel was last in operation shall be indicated. Bidder to confirm compliance in his technical bid.

4. TECHNICAL SPECIFICATIONS FOR OSV (OFFSHORE SUPPLY VESSEL)

- To carry men and material between base and offshore installations, as well as between offshore installations only where such facilities are available.
- To carry out stand by and rescue operations in offshore, if required.
- To assist in exigencies arising in offshore.
- To carry out routine surveillance in offshore for safety and security reasons.
- To carry out any other field work which may be within the natural capabilities of the chartered vessel, as instructed by Operator's own operations and that of JV partners in cases of emergency.
- The vessel must be available for offshore work round the clock, 24 hours, a day, during the term of the Charter Party.
- The above work shall always be performed within the vessel's natural capabilities and within safe parameters.
- The OSV shall have enough deck space to accommodate long items like 50/75 ft. riser joints with buoyancy material, 13.5m casing joints, 55 feet stroke length telescopic joints, items and other standard oilfield service units, materials etc. Deck area of greater than 500 square meters is preferred.
- There shall be separate tankage available on vessels for bulk items such as barite, cement, diesel, water, liquid mud (Water based + SOBM), etc. to support the rig operations.

- The Vessel shall be equipped with oil-spill contingency equipment including spray booms (1 x 8 m ea. Port & Starboard) and pump, to handle / assist during oil spill.
- The DG Shipping Guidelines and Rules shall be binding to the Bidder / Contractor for deployment of Marine Vessels.

TECHNICAL SPECIFICATION SHEET –

OSV/PSV VESSEL OF NOT LESS THAN 2400 DWT

Sl. No	Parameter	Company Requirement	Bidder specification
1	**GENERAL**		
1.1	Name of the Bidder		
1.1	Name of the vessel		
1.2	Name of owner		
1.3	IMO Number		
1.4	Hull Number		
1.5	Flag		
1.6	Port of registry		
1.7	Place of build		
1.8	Year of build	Not earlier than 2006. Contractor to refer DGS Order No. 06 of 2023 regarding age for compliance of offered vessel	
1.9	Name of yard		
1.10	Classification	ABS/DNV/BV/LRS/ IRS/GL or equivalent	
1.11	Delivery Status	Vessel should be 'Ready-Built (delivered)' or Under Construction' meeting	

		mobilization schedule as on date of TBOas on date of TBO	
1.12	Call sign/official No.		
2	**DIMENSIONS**		
2.1	LOA [meters]		
2.2	LBP [meters]		
2.3	Breadth mld [meters		
2.4	Depth mld [meters]		
2.5.1	Summer draught [meters]		
2.5.2	Operating draught [meters] and Deadweight	Minimum 2400 DWT	
2.6	Clear deck Area (Sq. Meters) Aft	Minimum 500 Sq. meters Vessel with any protruding structure like helideck etc. is not acceptable.	
2.6.1	Length [meters]		
2.6.2	Breadth [meters]		
2.6.3	Area [sq. meters]		
3	**MACHINERY**		
3.1	**Main Engines**		
3.1.1	Number of Main Engines	Not less than 2 [two]	
3.1.2	Make		
3.1.3	Model		

3.1.4	Max Continuous Rating (for all main engines together) at 100% NOMINAL	Not less than 4800 BHP	
3.1.5	Year of build	New at the time of installation onboard the vessel	
3.2	**Main propulsion**		
3.2.1	Number of propellers	Not less than 2 [two] or as per class requirement	
3.2.2	Type	Shrouded CPP (Kort Nozzle) or Z-Peller or Zip Drive or better	
3.2.3	Propeller diameter [mtrs]		
3.2.4	Propeller make		
3.3	**Thrusters**		
3.3.1	Number of bow thrusters	Not less than 2 [two]	
3.3.2	Number of stern thrusters	Not less than 1 [one]. In case of Z-peller/Zip drive, Stern thruster	
3.3.3	Rating of BTs		
3.3.4	Rating of STs		
3.4	**Generators**		
3.4.1	Number of generators	At least two independent generators are other than main shaft generators.	
3.4.2	Total rating [KVA]		
3.4.3	Voltage rating		
3.4.4	Frequency [Hz]		
3.5	**Steering gear**		

3.5.1	Type	Hydraulic preferred	
3.5.2	Number of rudders	Minimum 2 [two] However in case of availability of Z-Peller or Zip Drive propeller system, the rudders are not mandatory.	
3.6	**Cargo Discharge Pumps**		
3.6.1	Cargo Discharge Pumps	(1) Fuel Oil (FO) cargo pump having capacity not less than 100m3 / hour at 75 meters head (2) Fresh Water (FW) / Drill Water (DW) pump having capacity not less than 100m3 / hour at 75 meters head Back up pumps for both FO and Water of equivalent capacity should be available to deliver FO and Water in case of failure of main pump.	
4	**DYNAMIC POSITIONING CONTROL SYSTEM**		
	Dynamic Positioning control System	DP-2 system with joystick with +/- 3 meter in Sea State 4. DP-2 is to be used as per requirement of field on supply at installation, in FIFI and SAR mode. The DP-2 system must	

		have at least one DGPS as reference system. Two DGPS with signals for differential corrections from two independent sources will be considered as two reference systems. No additional / Separate payment will be made for DGPS Signal during DP operation.	
5	**PERFORMANCE**		
5.1	Maximum speed [knots]		
5.2	Economic Cruising speed [knots]	Minimum 10 at 100% DWT	
5.3	Fuel consumption [Kl/day]		
5.3.1	Standby at wharf		
5.3.2	Standby at rig location		
5.3.3	Alongside rig		
5.3.4	Underway – economic cruising		
5.3.5	Underway – maximum speed		
6	**NAVIGATION AND COMMUNICATION EQUIPMENT**		
6.1	Gyrocompass	Required, Conforming to DG Shipping/IMO Guidelines.	
6.2	Magnetic compass	Required, Conforming to DG	

		Shipping/IMO Guidelines.	
6.3	Echo sounder	Required, Conforming to DG Shipping/IMO Guidelines.	
6.4	Auto pilot	Required, Conforming to DG Shipping/IMO Guidelines.	
6.5	Radar	Required, Conforming to DG Shipping/IMO Guidelines.	
6.6	SSB Radio transceiver/ GMDSS	Required, Conforming to DG Shipping/IMO Guidelines.	
6.7	Marine VHF transceiver	Required, Conforming to DG Shipping/IMO Guidelines.	
6.8	GPS	Required, Conforming to DG Shipping/IMO Guidelines.	
6.9	Portable VHF	Required, Conforming to DG Shipping/IMO Guidelines.	
6.10	INMARSAT	Required, Conforming to DG Shipping/IMO Guidelines.	
7	**ACCOMMODATION**		
7.1	Crew complement	Required	
7.2	For charterer's use	Suitable accommodation for five persons required	
8	**CAPACITIES**		
8.1	Deck cargo	Not less than 750 tons	
8.2	Deck loading [T/sq.mtrs]	Minimum 5T/m2	
8.3	Fuel (m3)	Minimum 500 m3	
8.4	Drill water (m3)	Minimum 450 m3	
8.5	Pot water (m3)	Minimum 450 m3	
8.6	Ballast water (m3)		
8.7	Base Oil (m3)	Minimum 150 m3	
8.8	Liquid mud (m3)	Minimum 450 m3	

	(SG 2.5) with agitator arrangement Pumping rate: 75 m3/hr		
8.9	Dry bulks (m3)	Minimum 225 m3. Tanks installed on deck are not acceptable.	
8.10	Dead weight	Not less than 2400 tons at max draft	
8.11	4" Cam lock couplings	Required on all hoses with reducers of appropriate size.	
9	**OTHERS:**		
9.1	Fire Fighting	Fi-Fi Class-1 required, Vessels with external fire-fighting capabilities would be preferred.	
9.2	Search and Rescue (SAR)	1. The vessel must comply with the requirement of the SOLAS convention of 2001 for cargo ships as amended to date and UKOOA guidelines for "Standing by Duty" Offshore Installations (Group B), as per the following. 2. All crew must be provided with high visibility armbands, waistcoats or other means for use in emergencies, which	

		identify them as vessel crew members. 3. Every vessel must be provided with a system to aid personnel climbing the ship's side from the sea or rescue craft alongside. This system must provide a more rigid, non-slip climbing and grip surface. 4. Temporary refuge for survivors must be supplied by a rescue basket. 5. Vessels of all groups must carry at least 12 lifebuoys. Two of the twelve lifebuoys must be fitted with self-igniting electric lights and smoke signals and two with self-igniting electric lights. The remaining eight must be provided with 30M buoyant lines and conveniently situated for easy access by the crew engaged in the recovery of survivors. 6. A bridge-operated "Man Overboard" alarm must be installed which is audible throughout the vessels and is separate and distinct from all other alarms. In	

		areas of high ambient noise levels, audible alarms may be supplemented by visual alarms. 7. A daylight signalling lamp, mains and/or battery powered, plus a portable battery–operated loud hailer must be provided on the bridge. 8. At least two directional searchlights must be provided that together provide the capability of illuminating any area of the sea over a 360- degree arc and for a distance of at least 75M. Such lights must be capable of remote operation from within the bridge and the designated to illuminate as large an area of the sea as possible. 9. Rescue nets shall be not less than 5M wide, weighted at the bottom and long enough to extend below the waterline with the vessel at the light draft. 10. Medical inventory- An inventory of all medical equipment must be maintained on board in a	

		format that permits rapid confirmation of current stock levels and expiry dates. The following are to be provided and maintained. a. Stretcher- Basket type with straps suitable for transporting patients within the vessels- 2 Nos b. Blanket -20 Nos c. Bandages and dressings are enough for 20 Nos survivors. d. Anti-hypothermia blankets of heat reflective and heat retaining material for 20 survivors. e. Enough emergency medicines. Fast Rescue Craft f. The vessel is to be equipped with at least one fast rescue craft (FRC) of a capacity of 15 persons in addition to the rescue boat (as per the SOLAS Convention). FRC must meet UKOOA Guidelines for "Standing by Duty" for	

		Offshore Installations arranged and maintained to be permanently ready for use under all weather conditions. The launching arrangement must be SOLAS approved type. g. Vessel must have 1 No. Aero VHF of suitable frequency for communication with helicopters. h. Both Davits and FRCs are to be serviced annually by OEMs or as per DG Circular 2/2020 (In case of non-OEM) and as per MSC.1/Circ 1632 dated 14/12/2020.	
9.3	Breathing Apparatus	Min 18 Nos for rescue operation for 15 minutes durations.	
9.4	Oil Pollution Certificate	Required to comply with MARPOL regulation	
9.5	Flow Meter	Turbine type or superior type flowmeter duly calibrated (accuracy +/- 0.5%)	
9.6	Spark Arrestor	Vessel should be fitted with Spark Arrestor at Exhaust Stacks.	
9.7	Notwithstanding what may have	Documents to be submitted	

	been stated elsewhere, the following documents/ certificates must also be enclosed with the unpriced bids to allow OIL to assess the capabilities of the offered Anchor Handling Tug.	with un- priced bid: a. General arrangement plans: These must be sufficiently detailed to show the deck area including the towing and anchor handling equipment b. Registry Certificate c. First Registry Certificate with the date of issue of registry certificate to confirm the age of vessel as on the date of Techno commercial bid opening (TBO) Data Sheet to be filled in for the offered vessel	
9.8	Certificates	Copies of the following must be submitted with the Technical Bid as well as at the time of TPI: 1. Class Certificate. 2. Cargo-ship Safety Construction Certificate. 3. Cargo-ship Safety Equipment Certificate. 4. Cargo-ship Safety Radio Certificate 5. International Load Line Certificate.	

		6. International oil pollution prevention certificate 7. Safety Management Certificate as per ISM Code. 8. Registry Certificate. 9. International Ship Security Certificate as per ISPS Code. 10. International air pollution prevention certificate 11. International sewage pollution prevention certificate 12. Certificate of Tonnage 13. Safe Manning Document 14. Ship Station License	
Notwithstanding anything specified above, the Bidder must ensure: i That the vessels offered by them shall be able to provide the required services. They are fitted with Communication, Navigation and LSA/FFA as per the latest applicable regulations			
QUESTIONNAIRE			
Wheelhouse Visibility		All round visibility is required with forward and aft consoles and Joystick control from the wheelhouse.	
Vessels and crews experience		To confirm providing the experience list before mobilization.	

To confirm providing the experience list before mobilization.	List Minimum one well / One Project in Last Three (03) years	
English speaking crew	Indicate if the crew speak English (Master and First Mate must be fluent in spoken and written English)	
Licensed passenger capacity		
Standby passenger certification		

5.0 SPECIAL INSURANCE

Insurance policies (as applicable) are to be procured and maintained by the Owners under the Insurance

1. **Marine Hull Insurance -** Hull and Machinery Insurance shall be provided with limits equal to the full value of the Vessel.
2. **Protection and Indemnity (Marine Liability) Insurance -** Protection and Indemnity or Marine Liability insurance shall be provided for the Vessel with a limit equal to the value under paragraph 1 above or U.S. $30 million per occurrence, whichever is greater and shall include but not be limited to coverage for crew liability, third party bodily injury and property damage liability of the owners and the Charterers, including collision liability, towers liability (unless carried elsewhere), damage to the Platform or the Rigs, loss or damage of the goods or property of the Charterers and pollution liability. The policy limits must be increased by US$10 Million for the loss of cargo per occurrence carried by the Vessel either of the Charterers or their contractors or subcontractors or third-party cargo as per instructions of the Charterers.
3. **General Third-Party Liability Insurance -** Coverage shall be for:
   a. Bodily injury U.S.D. $2 MILLION...per person
   b. Property Damage U.S.D. $5 MILLION ...per occurrence
4. **Workmen's Compensation and Employer's Liability Insurance for Employees**

Covering non-employees for statutory benefits as set out and required by local law in the area of operation or area in which the Owners may become legally obliged to pay benefits.

5. **War risk insurance** on the Vessel for the same value as in item (1) above, including war risk P & I coverage.

6. **Cargo Insurance:** Loss of Cargo of the owners or their contractors or subcontractors or third party to the extent of US$10 Million per occurrence. The policy coverage must include the loss of cargo caused by any reason including but not limited to negligence of the owner, its crew, master, officers or employees or workers of the contractors or subcontractors of the Charterers or deficiency of vessel, breakdown or failure of the vessel or its equipment, force majeure or any other reason attributable to owners or Charterers or their contractors or subcontractors.

6.0 Throughout the period of the charter hire, the Contractor is obliged to man the vessel with the Master and Crew. Crew complement to be not less than:

1	Master	:	One	Should be competent to 1. Work as a supply vessel to support rig operations, safety, and medical emergencies.
2	1st Mate (Chief Officer)	:	One	
3	Chief Engineer	:	One	
4	Second Engineer	:	One	
5	Seamen/Engine Room	:	Six	
6	Cook	:	One	
7	Messmen	:	One	
8	NWKO (Navigational Watch Keeping Officer)	:	Two	
	Note: Additional Complement to accommodate five of the Company's personnel.			
	Total		Fourteen	

6.1 EXPERIENCE CRITERIA FOR MASTER, CHIEF OFFICER, AND CHIEF ENGINEER

Designation		Experience
Master		(a) Minimum 1 (one) year experience as Master on a similar type and powered vessel 'OR' Minimum 2 (two) years' experience as Chief Officer on a similar type and powered vessel. (b) Must be holding at least a DPO limited Certificate.

Chief Officer		(a) Minimum 1 (one) year experience as Chief Officer on a similar type and powered vessels 'OR' Minimum 2 (two) years' experience as 2nd Officer/NWKO on similar type and powered vessels. (b) Must be holding at least a DPO limited Certificate
Chief Engineer		Minimum 1 (one) year experience as Chief Engineer on a similar type and powered vessel 'OR' Minimum 2 (two) years' experience as a 2nd Engineer on a similar type and powered vessel.
Note: In case combined experience at two levels (stipulated above) is submitted to meet the experience criteria then the same shall be considered on a weighted average basis. This is elaborated as follows: (i) Experience criteria for Master: Experience as Master] x 1 + [Experience as Chief Officer] x 0.5} should be minimum 1 year. (ii) Experience criteria for Chief Officer: {[Experience as Chief Officer] x 1 + [Experience as 2nd Officer/NWKO] x 0.5} should be minimum 1 year. (iii) Experience criteria for Chief Engineer: [Experience as Chief Engineer] x 1 + [Experience as 2nd Engineer] x 0.5} should be minimum 1 year. Only OSV experience will be considered for OSV vessels.		

Notes:

1. The Master / Chief Officer should be competent to undertake the scope of work as stated in the tender document.

2. During the currency of the contract, if it becomes mandatory to position additional crew, the same will be provided by the Contractor at his own cost.
3. The crew and master proposed to be deployed for the vessel should have undergone training for Survival at sea and H2S evacuation training from a reputed maritime institute.

In addition to the above, the Owner (Contractor) shall ensure strict compliance to DG Shipping Guidelines and Rules governing the Competency of Crew. The vessel should be operated with competent and authorized personnel only.

6.2 EXPERIENCE CRITERIA FOR SERVICE PROVIDER

The Marine Vessels may be provided by the Bidder or through its Sub-contractor. The following minimum criteria should be met by the Contractor/Sub-Contractor/Service Provider:

1.0 The Service Provider should have a minimum of three (03) years of experience in providing Marine Vessel Services to Drilling Companies / E&P Companies / Drilling Service Providers.

1.1 The Service Provider should have executed at least one contract of minimum 01 (One) year duration of providing Marine Vessel Services to Drilling Companies / E&P Companies / Drilling Service Providers in the last 07 years reckoned from original bid closing date.

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17 PROJECT COORDINATOR AND RIG-SITE CO-ORDINATORS

1. SCOPE OF WORK FOR PROJECT COORDINATOR

1.0 GENERAL

The Project Coordinator shall be based in Kakinada and shall be responsible for all activities under the bundle services. The project coordinator shall be in direct interaction with the Company operation team to coordinate all activities. The Project Co-ordinator must have the entire power requisite for performance of the work. He must liaise with all bundle service providers and report to the OIL Drilling Head, based in Kakinada for the proper co-ordination and timely execution of the job.

The Scope of Work will include but not be limited to below:

a) Project Coordinator shall be the focal point and responsible to coordinate all the operations under the scope of Bundle Services at the drilling unit, shore base, personnel mobilization to the drilling unit and shore base, consumables planning, equipment planning, movement, and all other related issues for any jobs as required in consultation with Company Representative.

b) Planning and coordinating all operations with Company Representative.

c) Planning of initial mobilization of services as required.

d) Planning of all personnel movement between the drilling unit and shore base as per operations requirement.

e) Planning in advance all equipment movement to the shore base and further to the drilling unit.

f) Provide and update all material inventory for all services under the umbrella of Bundle Services.

g) Planning of vessel movement in consultation with the Company and other third-party services.

h) Timely replacement of worn-out equipment.

i) Planning of movement of consumables to the shore base and further to the drilling unit.

j) Plan importation of all tools and equipment and Re-export of all equipment when demobilized by the Company.

k) Keep the Company posted on all personnel and equipment movement.

l) Plan all upcoming repair / redressing / calibration / recertification / inspections / of tools.

2.0 EXPERIENCE

The Project Coordinator must be an Engineering Graduate having minimum Ten (10) years of Oil & Gas field experience and must have a minimum of seven (07) years of experience working as a Project Coordinator to support Drilling/E&P Companies with at least three (3) years in offshore operations. He must have also worked as a Project Manager/Project Coordinator for an E&P Operator for handling Bundle Services comprising of Cementing Services, Directional Drilling Services, Mud Engineering Services, Wireline Logging Services, and Well Testing Services at least for a period of 2 years in offshore rig operations.

2. SCOPE OF WORK FOR RIG SITE COORDINATOR (DAY)

1.0 GENERAL

The Rig Site Coordinator shall be located on the Drilling Unit and shall be responsible for all activity under the bundle services on the rig. The Rig-Site Co-ordinator will liaise from Drilling Unit with Project Co-Coordinator for entire bundled services. The Rig-Site Co-ordinator will report to the Drilling Supervisor / Company Representative, on Drilling Unit, for operational and logistics matters related to bundle services for ensuring smooth, uninterrupted, and safe operations.

The Scope of Work will include but not be limited to below:

a) The Rig Site Coordinator will coordinate all operations on the drilling unit and with the shore base for material and personnel mobilization to the drilling unit, consumables planning, equipment planning, movement, and all other related issues for any jobs as required in consultation with Company Representative on the Drilling Unit, Tool Pusher, all third-party Service Supervisor.
b) Advance planning and coordinate all operations with Drilling Unit Company Representative.
c) Planning of all personnel movement between the Drilling Unit, helicopter base, and shore base.
d) Planning in advance all equipment movement with the shore base and further to the drilling unit.
e) Provide and update all material inventory for all services and Company on the Drilling Unit.
f) Planning of vessel movement in consultation with the Company and other third-party services.
g) Timely replacement of worn-out equipment.
h) Planning of movement of consumables to the shore base and further to the drilling unit.
i) Re-export of all equipment when demobilized by the Company.
j) Keep the Company posted on all personnel and equipment movement.
k) Prepare a fortnight look-ahead of all activities.

2.0 EXPERIENCE

The Rig Site Coordinator must be an engineering graduate or a Diploma in engineering having minimum 7 years of Oil & Gas field experience. He must have a minimum of five (05) years of experience as Project Coordinator / Rig Site Coordinator to support Drilling/E&P Companies with at least three (03) years in offshore rigs.

3. SCOPE OF WORK FOR RIG SITE LOGISTICS COORDINATOR (NIGHT)

1.0 GENERAL

The Rig Site Logistics Coordinator shall be located on the Drilling Unit and shall be responsible for all logistics activity under the bundle services on the rig. The Rig Site Logistics Coordinator will be responsible for personnel and materials management to co-ordinate and manage the rig logistics (air and marine) services which will be rendered by other Company's third-party service providers.

The Scope of Work will include but not be limited to below:

a) The Rig Site Logistics Coordinator will overall manage the air, marine, other logistics and materials in consultation with the Project Coordinator, Rig Site Coordinator, Company Representative, Tool Pusher, and all other service supervisors including any Company third party.
b) Planning/Coordination with the Drilling Unit, Shore-base, and Company for crew movement, supply of consumables, equipment in time for uninterrupted operation on the rig.
c) Planning/Coordination with Shore-base, Rig, and Heli base and ensure every helicopter sortie and the marine vessel is planned according to the rig operations.
d) Forward planning to supply required materials to the Drilling Unit in time for uninterrupted operation.
e) Keeping account and record of materials received and dispatched by service providers, other contractors and stock with them at Shore bases.
f) Keeping up-to-date accounts and inventory of materials at Shore Base and Rig.
g) Receiving and dispatching of Materials owned by the bundle service provider, Company, and keeping inventory and record of such incoming & outgoing materials and stock thereof.
h) Keeping details records of all helicopter sortie and marine vessel voyage/trip including details of materials dispatched.
i) Keeping account of material consumption and preparation of statement of the same.
j) Keep Company informed for any deficiency observed on the part of the other service providers and shore-based facilities that may hamper the drilling operations.
k) Daily Reporting to Company base office with latest updates and submission of weekly / fortnightly / monthly report as per requirement of Company.
l) Any other activities required for completion of the work.

2.0 EXPERIENCE

The Rig Site Logistics Coordinator must be a Graduate having minimum 10 years of Oil & Gas field experience. He must have a minimum of seven (07) years of experience as Rig Site Logistics Coordinator to support Drilling/E&P Companies with at least three (03) years in offshore drilling units.

(*END OF SECTION-II, PART-3*)

SPECIAL CONDITIONS OF CONTRACT (SCC)

(DRAFT)

Following terms and expression shall have the meaning hereby assigned to them unless the context requires otherwise. The expressions not defined here shall have the meaning ascribed to them in Section-I: "General Conditions of Contract". Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

1.0 DEFINITIONS

Following terms and expression shall have the meaning hereby assigned to them unless the context otherwise requires:

i. **"Services"** means the associated services to be provided by the contractor for supporting and carrying out drilling operations, well testing and well abandonment in accordance with the "Scope of Work" mentioned at Section-II of Part-3 in this bid document but not limited to

a) All equipment, consumables from Contractor required for OIL's operation and

b) All equipment, spares required for servicing / maintenance of Contractor's Equipment, as stipulated in the "Scope of Work" at Section-II of Part-3 in this bid document.

ii. "**Drilling Unit"** means DP-3 Drillship (MODU) Package complete with pumps, power packs, drilling equipment and other accessories.

iii. **"Marine Vessels**" means OSVs / PSVs complete with other accessories and equipment as listed in the bid document required for Drilling operations.

iv. Company means hereafter as "**Oil India Limited**".

v. "**Operating Area**" means those areas in Krishna Godavari offshore and Mahanadi offshore in the East Coast offshore Indian waters in which the company or its affiliated company may from time to time be entitled to conduct drilling operations.

vi. "**Location**" means the surface coordinates as specified in the bid document and other places, on/under/in or through which the services are to be executed by the Contractor provided by the company for working space or any other purpose as designated hereinafter as forming part of the location.

vii. "**Shore Base**" means the logistics support base where the Contractor's, Company's and Company third party personnel and equipment will be shipped, stored, maintained and delivered to support the offshore Drilling Unit as per the Contract. Shore base services shall be provided from Kakinada, Andhra Pradesh.

viii. "**Operation Base**" means the place or places, onshore, designated as such by Company from time to time.

ix. "**Company's items**" – if any means the equipment, materials and services – if any, which are to be provided by company at the expense of company and as listed in the bid document.

x. "**Contractor's items**" means the equipment; materials and services, which are to be provided by Contractor or company at the expense of the Contractor which, are listed in section under terms of reference and technical specifications.

xi. "**Contractor's personnel**" means the personnel as mentioned under section terms of reference and technical specification, to be provided by Contractor from time to time to conduct operations hereunder.

xii. "**Contractor's representatives**" mean such persons duly appointed by the contractor thereof at location / Base to act on Contractor's behalf and duly notified in writing to the Company.

xiii. "**Day**" means a calendar day of twenty-four "24 consecutive hours beginning at 00:00 hrs. and ending at 24:00 hrs.

xiv. "**Approval**" as it relates to Company, means written approval.

xv. "**Commencement Date**" means the date on which the contractor commences the Services for the first well under this bid.

xvi. "**Spudding in of the well**" means the initiation of drilling of the well at the location after alignment and after the Drilling Unit preparation is complete in all respects subsequent to clearance from naval, safety, audit and the Company Representative.

xvii. "**Drilling Operation**": Means all operations as generally understood for drilling Oil/Gas wells, more particularly all the operations required to be carried out pursuant to this bid.

xviii. "**Inter-location movement**" means the beginning from when the Drilling Unit is released from previous location with the last transponder on board and ending when Drilling Unit is positioned over the next location with all the transponders lowered on seabed and rig location accepted by Company.

xix. "**Facility**" means and includes all property of Company owned or hired, to be made available for services under this Contract and as described in this agreement which is or will be a part of the Company.

xx. "**Certificate of Completion**" means certificate issued by the Company to the Contractor stating that he has successfully completed the jobs/works assigned to him and submitted all necessary reports as required by the Company.

2.0 EFFECTIVE DATE, DATE OF COMMENCEMENT OF THE CONTRACT, MOBILISATION TIME AND DURATION OF CONTRACT:

2.1 EFFECTIVE DATE: The contract shall become effective from the date Company notifies Contractor in writing (through Letter of Award) that it has been awarded the

contract. The date of issue of Letter of Award (LOA) by Company to the Contractor shall be the Effective Date of the Contract.

2.2 DATE OF COMMENCEMENT OF THE CONTRACT:

The Contract shall commence when -

(a) All the services under Group – I (Exclusive of Liner Hanger Equipment & Liner Running Services and Tubular for Well Testing) are mobilized for supporting operations at 1st Drillship as per the mobilization schedule (mentioned in clause 2.3 below) and are ready in all respects to commence respective Scope of work; **AND**

(b) Marine Vessels are mobilized as per the mobilization schedule, duly Customs and Naval cleared and are ready for loading equipment at the designated port and duly certified by the Company Representative; **AND**

(c) All the services under Shore Based Services are mobilized and ready in all respects to commence operations as per the respective Scope of work including but not limited to obtaining all statutory clearances, Port clearance, Customs clearance, any other requisite clearances etc. and duly certified by the Company Representative; herein referred to as "Commencement Date".

2.3 MOBILISATION TIME AND DEMOBILIZATION:

The Contractor shall mobilize all Bundled Services under Group-I and Group-II, along with the crew, to commence operations as per Scope of work of individual services and as per the mobilization schedule to the designated locations detailed below. If the mobilisation of the rig is more than 60 days from the mobilization notice of this Contract (For Group-I services), the Contractor has to plan and keep the services ready for mobilisation for the rig, as per Company's requirement, for which the Contractor may interact regularly with the Company.

The mobilization of the Marine Vessels shall commence on the date of issue of the mobilization notice and will continue until the Vessels along with all equipment, tools,

accessories, materials and manpower has obtained Naval Clearance, has reached the Port of Call and are ready to commence operations duly certified by the Company Representative.

Company will deploy TPI agency to inspect the Marine vessels before mobilization as spelt out in this bid document. Thus, the Marine vessels should be offered for inspection by Company's nominated TPI agency prior to mobilization with at least 15 days' notice. Contractor should indicate their acceptance to this effect in the techno-commercial bid.

The Contractor will advise readiness for commencement of mobilization of the Marine Vessels to Company, at least 7 days prior to commencement of actual mobilization.

The services shall be mobilised at the designated following locations (except where asked specifically for any item/service otherwise elsewhere in the document) as detailed below:

Sl. No.	**Name of the Services**	**Designated Location**	**Mobilization Period.**
GROUP-I SERVICES			
1.	Cementing equipment & services (inclusive of consumables)	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
2.	Casing Accessories	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
3.	Casing & Tubing Running services	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
4.	Drilling tools, Hole Openers, Under Reamers, MACB & WBCO Services	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company

	Tubular for Well Testing	At Contractor's Base in Kakinada / Drilling Unit	Within 120 days of Mobilization notice issued by Company
5.	Directional Drilling services – Mud Motor / MWD/ LWD	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
6.	Mud Engineering services (inclusive of consumables)	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
7.	Drill bits & Bi-Center Bits	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
8.	Liner Hanger Equipment & Liner Running Services	At Contractor's Base in Kakinada/ Drilling Unit	Within 150 days of Mobilization notice issued by Company
9.	Mud logging services	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
10.	Subsea well heads with Services and Conductor pipes	At Contractor's Base in Kakinada / Drilling Unit	Within 210 days of Mobilization notice issued by Company
11.	Well testing services, surface and down hole	At Contractor's Base in Kakinada / Drilling Unit	Within 120 days of Mobilization notice issued by the Company. For Consumables (liquid Nitrogen, Methanol, PPD, Demulsifier, & defoamer): Within 14 days of mobilization

			notice issued by the company
12.	Fishing and Milling tools and services	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
13.	Wireline Logging Services	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
14.	Coring Services	At Contractor's Base in Kakinada / Drilling Unit	Within 90 days of Mobilization notice issued by Company
GROUP-II SERVICES			
15.	Shore Based Services Sea Port	Sea Port -Kakinada	Within 150 days of Mobilization notice issued by the Company
16.	Marine Vessels – 2No's (OSV/PSV)	Port of call- Kakinada	Within 150 days of Mobilization notice issued by the Company
PROJECT COORDINATOR AND RIG SITE COORDINATOR			
17.	Project Coordinator	At base (Kakinada)	Within 30 days of Mobilization notice issued by Company
	Rig Site Coordinator (Day Tour)	At the Drilling Unit	Within 30 days of Mobilization notice issued by Company
	Rig Site Logistics Coordinator (Night Tour)	At the Drilling Unit	Within 30 days of Mobilization notice issued by Company

Note:

(i) Mobilization charges will be payable after the completion of mobilization as certified by the company.

(ii) The succeeding day of issue of mobilization notice shall be counted as day 01 for the purposes of Mobilization period. For the purposes of LD, the mobilisation would be deemed complete from the date and time equipment is complete in on-hire survey by Company.

(iii) For the initial mobilization of tools & equipment, on receipt of intimation from contractor, Company will inspect and certify within **10** working days. For successive remobilization, contractor must intimate Company about arrival of the tools & equipment and Company will inspect the tools & equipment for each re-mobilization within **05** working days of receipt of intimation from the contractor. Date of mobilization / re-mobilization will be considered from the date of successful inspection carried out by Company representative.

Individual Service Day Rate ISDR / Monthly Rate (Shore base) / Operating Day Rate (Vessel)will be applicable after the stipulated time frame for inspection and if the inspection is not carried out by company representative within the stipulated time frame as mentioned above, provided it is not due to any fault of the Contractor.

All documents pertaining to the Marine Vessel(s) in connection with Block transfer - if applicable, other statutory clearances / documents etc. as applicable under law must be submitted / applied prior to mobilization. Mobilization will not be treated as complete by the Company unless all the statutory documents as required under law including but not limited to Class Certification, Registry, ISM code are submitted and are found to be in order and to the satisfaction of the Company.

(iv) However, on-hire inspection of all services shall be done at Base only. In case, any Service(s) which require mobilization at rig are not sent to rig after on-hire survey due to any reason not attributable to Contractor, then ISDR charges as applicable shall be payable

after 7 days onwards from on-hire survey date e.g., in case on-hire survey is done on Day 1, then ISDR shall start from Day 8.

(v) For supply of bits, an assorted of all consignment and 10% of total bits to be ready for use in Drilling Unit within 90 days from the date of 1st mobilization notice.

(vi) After the 1st mobilisation notice, detail break up of assorted types of Bits will be decided by OIL in consultation with Project co-ordinator. The subsequent quantities of drill bits are to be maintained in the shore base (Kakinada) for replenishment of the quantity of drill bits consumed.

(vii). The Contractor has to submit the copies of import documents like B/L and assessed Bill of Entry & custom assessed invoice at the time of mobilisation, which clearly show the F.O.B. & C.I.F. values. For items available in India also, the Contractor will have to submit relevant import and customs clearance documents. For indigenous items if any, Contractor may submit the copy of relevant purchasing document.

(viii). Mobilization charges shall become payable after the Mobilised Services, ready in all respects as per scope of work, including obtaining all statutory clearances (as applicable) are mobilised to the respective locations as above and after on-hire survey by the Company Representative & provided it is certified by the Contractor and accepted by Company Representative that all items are in good working condition.

(ix) Company reserves the right to exercise the option of accepting part mobilization of services / tools / units / sets etc. if the same can be utilized operationally. However, the mobilization charges shall be paid only after completion of full services / tools / units / sets etc. In case, Company demobilizes such services / tools / units / sets etc after part mobilization, mobilization charges shall be pro-rated on the basis of CIF value as per import invoice vis-à-vis the CIF Value as per Contract when the mobilization charges are quoted in lumpsum basis. However, for those items whose mobilization charges have been quoted, the mobilization charges will be payable as per the rates quoted in the price proforma. In the event, the Drilling Unit cannot perform its intended operations for reasons due to non-mobilization of the outstanding equipment / tools / materials / services etc, then no rate whatsoever shall be payable to the Contractor except the cost of

the well consumables till the time the rig resumes its normal intended operations after mobilization of such equipment / tools / materials / services etc.

(x) Mobilization charges are inclusive of transportation, sea/airfreight, loading/unloading, shipping, wharfage/demurrage and harbour fees, port or airport fees, packing and handling charges, permit, import clearance charges and all insurance adequate to cover the shipment from the place of origin until arrival at Company's base/site where equipment is ordered to be mobilized.

(xi) Company shall have the option to ask for delayed mobilization of any unit / tools to be mobilized / remobilized as per Contract (except for Shore Based Services and Marine Vessels). A minimum notice period of 30 days before the scheduled date of mobilization shall be applicable at the time of asking for such delay in mobilization. Mobilization can be delayed for a maximum of 45 days (cumulative), limited to twice in the duration of the Contract.

(xii)Optional, Call out and Contingency Tools/Equipment/ Services wherever mentioned in the Contract shall be mobilized/ deployed by Contractor only on receipt of specific Company Notice.

(xiii) De-mobilization charges shall become payable on clearance & re-export of all equipment from Indian Port / Custom authorities for re-export of equipment to Contractor's base or Block Transfer or re-export to SEZ as permissible under applicable customs rules / regulations and provided Company is out of charge after Block Transfer or re-export to SEZ. However, Company shall not pay de-mobilization charges of services/tools/units/sets etc. which are not re-exported or not block transferred on completion of Contract/termination.

(xiv) The demobilization charge will include all expenses for inland transport, sea-freight/airfreight, loading and unloading, shipping, wharfage and harbour fees, port or airport fees, packing and handling charges, permit or octroi charges (if any), export clearance charges and all insurance adequate to cover the shipment until arrival at Contractor's base in the country of origin / port of origin.

(xv) De-hiring of Services: De-hiring of services/tools/sets/items etc. shall be as follows unless specified otherwise in the scope of work of any service:

a. Regular services / tools / sets / items – On receipt of notice / offloaded at Company's Shore Base.

b. Call out / optional services / tools / sets / items – After completion of job and upon offloading at Company's Shore Base.

Note: A **kick-off meeting** will be held within 30 days from the date of issue of the mobilization notice which the Contractor should attend and submit the Mobilization Matrix along with detailed schedules and various dates of deliverables. After the kick-off meeting Contractor shall submit fortnightly report or any other report as desired by the Company showing progress in each activity of mobilization. The Contractor should depute an Interim project Co-ordinator, at their cost, within 15 days from receipt of mobilization notice for better co-ordination with the company and on-time delivery of services.

2.4 INTERIM DE-MOBILIZATION & RE-MOBILIZATION:

(a) Interim De-Mobilization: Some of the services, intended to be hired, are normally for a short period of time and repeated in nature. After completion of a job at a particular well, Contractor should de-mobilize such services on interim basis including tool, equipment & crew (as applicable) on receipt of Interim Demobilization notice from Company and no rates (ISDR/OCDR) shall be applicable once the tool, equipment is offloaded at the designated shore base till the completion of Interim Remobilization as accepted and certified by the Company representative. The Interim Demobilization period will start once the tool, equipment is offloaded at the shore base. No day rates will be payable to the crew once they are offloaded from the Drilling Unit.

(b) Interim Re-mobilization: The interim Re-mobilization of each individual service shall be as per the Schedule defined in Table below:

Name of the Service	Re-Mobilization Period.

Liner Hanger Rental Equipment & Liner Running Services under Group – I Services.	Within 45 days of Re-Mobilization notice issued by the Company
Coring, Core Handling & Core Stabilization equipment & services under Group – I Services	Within 45 days of Re-Mobilization notice issued by the Company
Well testing Services & TCP Services under Group – I Services	Within 45 days of Re-Mobilization notice issued by the Company
9.5/8"/ 9.1/2" SDMM, Basic MWD tool and MWD collars with 7.5/8" Reg connections under Group-1 services	Within 45 days of Re-Mobilization notice issued by the Company
Brine Filtration Unit & Services under Group-I Services	Within 45 days of Re-Mobilization notice issued by the Company

Note:

(i) On receipt of Re-mobilization notice from Company, Contractor should complete the re-mobilization of service package with tool, equipment & crew (as applicable) within the stipulated time period at the designated location/drilling unit in readiness to commence work as envisaged under the Contract as per SOW, duly accepted and certified by the Company's representative.

(ii) Re-Mobilization charges will be payable after the completion of re-mobilization as certified by the company.

(iii) The succeeding day of issue of re-mobilization notice shall be counted as day 01 for the purpose of re-mobilization period.

(iv) For first and successive re-mobilization, contractor must intimate Company about arrival of the tools & equipment at Contractor's Base at Kakinada and Company will inspect the tools & equipment for each re-mobilization within **05** working days of receipt of intimation from the contractor. Date of re-mobilization will be considered from the date of successful inspection carried out by Company representative.

2.5 DURATION OF CONTRACT:

The Contract calls for provisioning of Bundled Services for Two (2) Drillships in a staggered manner. The duration of the Bundled services contract shall be for a period of 3 (Three) years from the date of commencement of the contract, subject to following conditions:

(i) The contract shall commence as per the requirement of commencement of the contract of the Drilling Units (contracted by the Company). The Contract will be automatically extended for completion of jobs in the last well being drilled on the date expiry of primary or extended tenure of this Bundled service Contract, on the same rates, terms & conditions.

(ii) The contract duration may be extended by up to one (1) more year at the sole discretion of the Company at the same rates, terms and conditions.

(iii) Some of the services may be required even after de-hiring of the Drilling Unit and as such the individual services shall be successively de-hired as per the requirement of the last well.

(iv) Payments of any individual services shall be made as per the provisions of conditions specified in the Contract for each service.

Note: The successful Bidder is required to sign a formal detailed contract with Company within a maximum period of 90 days of date of issue of Letter of Award (LOA) subject to submission of necessary Performance Security (Bank Guarantee) as per the T & C of the tender. Until the formal Contract is signed, LOA shall remain binding between the two parties.

3.0 LIQUIDATED DAMAGES FOR DEFAULT IN TIMELY MOBILISATION:

3.1 Time is the essence of this Contract. In the event of the Contractor's default in timely mobilization for commencement of operations within the stipulated period, the Contractor shall be liable to pay liquidated damages (LD) @ 0.5% of the estimated

Contract value (as detailed below) including mobilization cost, per week or part thereof of delay subject to maximum of 7.5%.

3.1.1 For delay in mobilization of the services which are advised to be mobilized for commencement of contract, LD will be applicable on the estimated contract value for all the services advised being mobilized.

3.1.2 For delay in mobilization of the services which are advised to be mobilized at a later date in the duration of the contract, LD will be applicable on the estimated contract value for those services.

3.2 Company shall have at any time but after the stipulated period for mobilization, the right to terminate the Contract in the event Contractor fails to deploy all services at the designated locations within aforesaid period, without prejudice to any other clauses including LD Clause. The parties agree that this is a genuine pre-estimate of the loss/damage which will be suffered on account of delay/breach on the part of the contractor and the said amount will be payable on demand, without there being any proof of the actual loss or damage caused by such delay/breach.

3.3 In case the Contractor fails to mobilize and deploy the services along with crew and/or fails to commence operations within the allocated mobilization time, Company shall have, without prejudice to any other provision in the contract including sub clause below, the right to invoke the performance security, forfeit the amount of performance security and terminate the contract. Apart from termination, Contractor will be put up on holiday of two years (CONSEQUENCES OF TERMINATION).

3.4 If the Contractor is unable to mobilize / deploy the Services and commence the operation within the mobilization period specified in clauses above, it may request the Company for extension of the time with unconditionally agreeing for levy/payment of Liquidated Damages. Upon receipt of such a request, Company, at its discretion, may extend the period of mobilization and Company as its sole remedy can recover from the Contractor as ascertained and agreed Liquidated Damages as under of the Contract conditions.

4.0 INDIVIDUAL SERVICE DAY RATE (ISDR):

4.1 Contractor shall be paid Individual Service Day Rate (ISDR) for all the services covered under Bundled Services (exclusive of Coring, Core Handling & Core Stabilization Services, Directional Drilling services, Liner Hanger Running Services and Well Testing Services) from the time they are mobilized at the respective designated locations as per the Mobilization clause 2.3 and made ready in all respects to start operations, during entire period of the Contract as per the rates given at rate schedule provided the Marine Vessels (OSVs) and Shore Based Services are ready in all respects to commence operations as per the respective Scope of work and duly certified by the Company Representative.

Individual Service Day Rate (ISDR) will be payable for that service if the onhire inspection during initial mobilization is not completed within 10 working days, provided the other services are ready in all respects to start operations. However, during on-hire inspection, some or any tool, equipment, consumables etc are found non-compliant then the rates paid for that service shall be recovered.

Individual Service Day Rate (ISDR) will also be payable for that service if the on-hire inspection during interim remobilization is not completed within 05 working days. However, during on-hire inspection, some or any tool, equipment, consumables etc are found non-compliant then the rates paid for that service shall be recovered.

4.2 Contractor shall be paid Individual Service Day Rate (ISDR) for Coring, Core Handling & Core Stabilization Services, Directional Drilling services, Liner Hanger Running Services, and Well Testing Services from the time they are mobilized and made ready in all respects to start operations as per instruction of the Company and as per the Mobilization / remobilization clause 2.3 & 2.4, except when specifically, otherwise provided for in this Contract as per the rates given at rate schedule. ISDR shall not be payable during the period OCDR is payable in the Drilling Unit. When the Coring, Core Handling & Core Stabilization Services, Directional Drilling services, Liner Hanger Running Services and Well Testing Services is interim demobilized the ISDR shall cease as per clause 2.4 (a).

4.3 The Individual Service Day Rates (ISDR) should include the base crew cost.

5.0 OPERATING COMPONENT DAY RATE (OCDR) / OPERATING DAY RATE (ODR):

Contractor shall be paid Operating component day rate (OCDR) whenever applicable for Directional Drilling services (SDMM or MWD/LWD), Coring, Core Handling & Core Stabilization Services, Wireline logging services, Liner Hanger Running services and Well Testing services, except when specifically, otherwise provided for in this Contract as per the rate given at rate schedule. The period shall be pro-rated to the nearest hour.

5.1 For Wireline Logging Services, the Operating Day Rate/ Redressing charges shall be payable per job as per the actual 'Unit' of data acquired as listed in Proforma-B.

If a particular tool, including back-up tool, is found to be non-functional during operation in first job after initial mobilization, in that case neither **ISDR nor Operating Day Rate** shall be applicable from the date of receipt of that particular tool at OIL designated locations.

The ISDR / Operating Day Rate (as applicable) for the replacement tool will be payable; from the time the replacement tool is made available at OIL designated locations subject to it being functional on subsequent logging operations. However, the above penalty for the replacement tool shall be limited to 30 days.

5.2 For Directional Drilling services (Mud Motor or MWD/ LWD), the OCDR shall commence when the tool / first tool (as applicable) for each of these tool(s) shall be lowered below rotary and shall end when the same tool is out of rotary on rig floor. If a particular tool/equipment (for the particular hole size), including back-up tool/equipment (for the particular hole size), is found to be non-functional during operation in first well after initial mobilization thereby causing total shut down of operation, in that case neither **ISDR nor OCDR** shall be applicable from the date of receipt of entire consignment of different tool/equipment (for the particular hole size) at OIL designated locations. The **ISDR /OCDR (as applicable)** for the entire consignment of different tool/equipment (for the particular hole size) will be payable, from the time the replacement tool/equipment is made available at OIL designated locations subject to it being functional on subsequent run.

5.3 For Coring and Liner Hanger Running services, the OCDR for rental tools shall commence when any of the rental tool(s) is lowered below rotary and shall end when the tool is out of rotary on rig floor.

5.4 For Well Testing services, the OCDR shall commence when the first tool shall be lowered below rotary and shall end when the same tool is out of rotary on rig floor.

5.5 ISDR shall not be payable during the period OCDR/Operating Day Rate is payable for that particular service (Except for Wireline Logging & Perforation services).

5.6 For payment towards any ISDR/OCDR/ODR charges, the tool/equipment should always be available in working condition during that period.

5.7 ISDR rates should not be more than 75% of the quoted OCDR/ODR rates.

5.8 The Operating Day rate for Marine Vessels (OSVs) will become payable after the completion of Mobilization provided the Shore Based Services are ready to commence operations as per the respective Scope of work and duly certified by the Company Representative. The Contractor shall be paid quoted Operating Day Rate at all times during the term of the Contract, except when specially otherwise provided for in this Contract.

6.0 <u>BUNDLED SERVICE BREAK DOWN:</u>

6.1 The Individual Service Day Rate (ISDR) and Operating Component Day Rate (OCDR) / Operating Day Rate (ODR) quoted for that particular service covered in the Bundled Services (exclusive of marine vessels and shore-based services) shall not be paid for such period, that service either

i) Breaks down,

Or

ii) is not operating or not available as per its intended operations due to which the Drilling unit cannot perform its intended operations,

Or

iii) is not operating or not available as per its intended operations due to which the operation quality is compromised.

6.2 A deduction of 2.0% of average daily contract value, exclusive of marine vessels and shore-based services (i.e. total contract value subtracted by the contract value of marine vessels and shore-based services divided by **1095**) per hour of shut down shall be made from monthly invoices of the contractor in case of non-availability of the services resulting into shut down of Well operations and/or rig. This deduction shall be in addition to the zero rate for the duration of that particular service for which the rig has faced shut down of the operations.

For the purpose of such deductions, the following two conditions shall be considered:

(a) When break-down of Bundled Services result into shut down on rig (i.e. Drilling unit is not able to perform the intended operations).

(Time of breakdown shall be from the shutdown of rig operations i.e. from the time the drilling unit is not able to perform its intended operations to till the resumption of its intended operations.)

(b) When there is waiting on rig due to non-availability of any services/tools/units/sets etc. due to any delay attributable to the Contractor.

The parties agree that this is a genuine pre-estimate of the loss/damage which will be suffered on account of above reasons and the said amount will be deducted without there being any proof of the actual loss or damages caused by above reasons.

6.3 Shut down due to Wellheads:

In case there is shut down / interruption in operations at the Drilling Unit on account of non-availability of sub-sea wellheads or its items or required wellheads tools and services as per scope of work (due to factors attributable to the Contractor), in addition to deduction as per clause 6.2 above, Contractor will not be eligible for any of the Individual Services' Day Rates for all other services (exclusive of Marine Vessels and Shore Based services).

6.4 Shut down due to Drilling Bits, Casing Accessories and Liner Hanger Services:

In case the Drilling unit is not able to perform the intended operations on account of non-availability of Drilling Bits, Casing Accessories and Liner Hanger Services (consumables and running services) as per scope of work (due to factors attributable to the Contractor), in addition to deduction as per clause 6.2 above, Contractor will not be eligible for any of the Individual Services' Day Rates for all other services (exclusive of Marine Vessels and Shore Based services), other than Mud Engineering and Mud Logging Services.

7.0 SHORT DEPLOYMENT RATES:

In case, crew personnel, as requested by the Company, of any particular service is not available at the rig or base, then no day rate will be payable for that position and additionally, 0.5 times of the corresponding quoted day rate for that position shall be deductible for that period and Contractor shall invoice the Company accordingly.

8.0 INSPECTION CLAUSE:

Company shall get the equipment of various bundle services (inclusive of Marine Vessels) inspected on its own or through any of the following internationally reputed third party inspection agency as per the tender specifications. Company at its option, can nominate any one of the following third-party inspection agencies for inspection of various bundle services (inclusive of Marine Vessels) and the cost of the third-party inspection will be borne by Company:

a) OES, UAE
b) LRDISI
c) ABS
d) Oil field Audit Services Inc.,
e) DNVGL NDA
f) OMCI
g) Any other agency nominated by Company.

i) Company will accept the services only after Company/nominated third party inspection agency confirms that the services are as per tender specifications and that the

Marine Vessels has undergone regular repair/maintenance overhauling as per required industry practice.

ii) Subject to timely mobilisation of TPI Inspector by the Company, the Contractor has to ensure completion of all inspection before the services are allowed to be positioned at the rig/designated locations. Contractors to complete all inspection before the Marine Vessels are allowed to be positioned at the specified location.

iii) Bidder shall confirm Completion of inspection and complete readiness of stipulated services in all respects (inclusive of Marine Vessels), to the satisfaction of Company including conformity to Company tender conditions and specification certified by Company /third party inspection agency prior to commencement of contract.

iv) Notice for inspection as per (ii) above is required to be given by the Contractor at least 15 days in advance. Contractor should also ensure the commencement of inspection for the Marine Vessels at least 50 days prior to stipulated mobilization period. In case the Contractor fails to adhere to the time schedule, Company reserves its right to invoke the performance bond and terminate the contract without prejudice to any other right or remedy available as per contract.

v) Maximum time allowed for inspection of the initially mobilized services/tools/materials (exclusive of marine vessels), shall be 30 days (Cumulative). The Contractor has to offer the services for inspection on complete readiness of the stipulated services. In case this inspection takes more than 30 days (due to factors attributable to the Contractor), the cost of inspection beyond 30 days would be to the account of the Contractor. In case inspection team is to be mobilized subsequently, for compliance of deficiencies during the first inspection, the entire cost towards second or subsequent inspections shall be to the account of the Contractor. However, for cumulative 30 days, only the inspectors' daily service charges shall be borne by Company.

vi) Maximum time allowed on board, for inspection of the marine vessels is 5 days (cumulative) per marine vessel. The Contractor has to offer the Marine Vessels for inspection on complete readiness of the Marine Vessels. In case inspection takes more than 5 days (cumulative) per marine vessel, the cost of inspection beyond 5 days per vessel would be to the account of the Contractor.

vii) The charges for inspection for the cumulative period beyond 30 man-days for the initially mobilized services/tools/materials (exclusive of Marine Vessels) shall be paid

directly by the Company to the TPI Agency and will be recovered from the Contractor from their invoices upon commencement of the Contract.

viii) During all stages, the entire to and fro expenses towards travel (including Board & Lodging) of the surveyors from point of origin or the nearest airport from the location of the Marine Vessels as the case may be, to the Marine Vessels on board, and Board & Lodging of the Surveyors during the inspection of the Marine Vessels, shall be the responsibility of the Contractor.

ix) Contractor agrees to provide the documents and assistance at their own cost required for obtaining visa (for the inspectors) of the country where the Marine vessels are offered for inspection.

x) Contractor confirms that the Marine Vessels are equipped with all lifesaving equipment and fire-fighting equipment as per SOLAS and IMO regulations and agrees that valid certificates, from regulatory body shall be made available to the Company / Company nominated inspection team.

xi) For subsequent inspection during the contract, the inspection is to be completed within respective mobilization periods for which Bidder shall take timely action.

9.0 CONTRACTOR'S OBLIGATIONS:

9.1 PERSONNEL:

9.1.1 Except as otherwise provided, the selection, replacement, Contractor shall determine remuneration of Contractor's personnel. Such employees shall be employees solely of the Contractor. Contractor will ensure that its personnel will be competent as required under the service to be provided. However, the Contractor shall provide details of experience, qualification and other relevant data of the personnel to be deployed for scrutiny and clearance by the Company before the actual deployment, i.e within the mobilization period. The Contractor shall not deploy its personnel unless cleared by the Company. The contractor shall not replace the key personnel initially mobilised during the contract period, except in the case of leave, illness, and resignation.

9.1.2 The Contractor shall appoint a Project Co-Coordinator as the Contractor's representative who must be in charge of the project and must be primarily based in Kakinada. The Project Co-ordinator must have the entire power requisite for performance of the work. He must liaise with all bundle service providers and report to the OIL Drilling Head, based in Kakinada for the proper co-ordination and timely execution of the job.

9.1.3 The Contractor shall also appoint a Rig-Site Co-ordinator (Day Tour) and a Logistics Coordinator (Night Tour) based on the Drilling Unit. The Rig-Site Co-ordinator will liaise from Drilling Unit with Project Co-Coordinator for entire bundled services. The Rig-Site Co-ordinator will report to the Drilling Supervisor, on drilling unit, for operational and logistics matters related to bundle services for ensuring smooth, uninterrupted, and safe operations.

9.1.4 The Contractor will provide on regular basis, all category of their employee competent, suitably qualified, and adequately experienced personnel for necessary supervision and execution in carrying out the requisite operations correctly and efficiently throughout the Contract period in a professional manner. Personnel provided by the Contractor must observe all safety and statutory norms applicable to the Company and of the Contractor. Their performance must be to the satisfaction of the Company and the Contractor must be willing and ready to replace, at their own expenses, any of their personnel who are not found suitable by the Company.

9.1.5 The detailed biodata of all the personnel likely to be deployed under the service and the number of additional personnel planned to be deployed must be submitted to the Company with necessary documents before engaging them for Company's approval. List of Expatriates and Indian personnel with their biodata and experience in respective areas of work shall be furnished within 30 days of issue of letter of award or 45 days prior to commencement of contract (whichever later) and got approved by Company before commencement of the work.

Note: Replacement – if any during the currency of the Contract with equivalent qualification / experience needs Company's prior written approval.

9.1.6 All the personnel must have requisite experience in respective fields and should be fluent in English language.

9.1.7 The Contractor shall be solely responsible for and shall provide for all requirements of his personnel, and of their Sub-contractor(s), if any. These provisions will include but not be limited to their insurance, medical services, messing, transportation (both air and land transportation), vacation, salaries and all amenities, termination payments, all immigration requirements and taxes, if any, payable in India or outside at no extra charges

to the Company. Boarding and local transportation of Contractor's personnel during the entire duration of the Contract shall be arranged by Contractor at their cost.

9.1.8 Contractor will immediately remove the personnel upon receiving notice from the Company without hampering the operations and replace the personnel at the earliest, who in the opinion of Company, is incompetent, or negligent or of unacceptable behaviour or whose employment is otherwise considered by Company to be undesirable.

9.1.9 All the Contractors' personnel (as applicable) shall be conversant with Oil Field Safety and Fire Fighting Practices and shall comply with Company HSE norms and standards including but not limited "Training Requirement of Personnel" as mentioned under Clause No. 46.0 below

9.1.10 Contractor shall provide all personal safety gears for Contractor's personnel for safe working.

9.1.11 Contractors deploying foreign nationals required for execution of all work under the Service are required to have all necessary clearances as per the Govt. of India regulations.

9.1.12 Foreign Nationals deployed under the service should have proper work Visa as per the Govt. of India regulations, FRRO and MOHA clearances as required under law.

9.1.13 Fitness Certificate: All offshore going personnel should have valid Fitness Certificate issued by any Registered Medical Practitioner with minimum qualification of MBBS. The validity of the certificate should be 2 years from the date of issue. Contractor shall ensure to maintain valid certificates for everyone on board and should present the same for verification by Company when demanded anytime during the tenure of the contract. Contractor to submit the Fitness certificates issued post NIT date, at the time of submission of CV for approval by Company during mobilization period. Offshore personnel who have completed 60 years of age will need to submit medical fitness certificate every year.

9.1.14 The quoted day rate of national and expatriate service personnel shall be all-inclusive of their mobilization, local travel, boarding, lodging, and demobilization, including any remobilization. The Company shall provide transportation from Company designated Heli-base to the Drilling Unit, the Company will also provide accommodation and food while the personnel is on the Drilling Unit. Any day rates for personnel will be paid only when on the drilling unit. If any person/personnel are mobilized/remobilized

to the Company's Shore Base or offloaded from the Drilling Unit by the Company due to any other reason or contingencies at the Company's request, the Company shall pay only the quoted day rate which will be inclusive of local travel, boarding, lodging, etc.

9.1.15 **Data Integration**: Contractor must have the facility to integrate their data with Rig's communication system for Real-Time transmission.

9.2 FOOD, ACCOMMODATION, TRANSPORT AND MEDICAL FACILITY AT DRILLING UNIT:

9.2.1 Food & services as per industry practice and first-aid medical service for all personnel on board the Drilling Unit will be provided by the **Drilling Contractor.**

9.2.2 Air Logistic transportation of Contractor's and their third-party personnel to the offshore Drilling Unit shall be arranged by the Company. Contractor will have to arrange their own transportation arrangement up to Rajahmundry/ Visakhapatnam/ Bhogapuram/ Bhubaneswar airports (Company designated Heli bases).

9.3 CONTRACTOR'S ITEMS:

9.3.1 Contractor shall provide contractor's items and personnel to perform the services under the Contract as specified in this document.

9.3.2 Contractor shall be responsible for maintaining at his cost adequate stock levels of Contractor's items including spares and replenishing them as necessary.

9.3.3 Contractor shall be responsible for the maintenance and repair of all Contractors' items and will provide all spare parts, materials, consumables etc. during the entire contractual period.

9.3.4 Contractor will provide proper potable water plant or provide bottled drinking water at Marine Vessels.

9.3.5 The Company shall provide fuel to the Contractor's Equipment at the Drilling Unit. The Company shall also provide fuel for Marine Vessels.

9.3.6 Contractor will be responsible for lubricants for operation of Contractor's equipment at Contractor's cost.

9.3.7 Contractor will be responsible for fuel, lubricant and water consumed at its shore base. There will be no escalation in day rates throughout the duration of the Contract

including extension, on account of any price increase in fuel/lubricants, other consumables, etc.

9.3.8 Further the Contractor must indicate the average daily consumption of HF-HSD of the offered / mobilized marine vessels. The Contractor also must submit day-wise HF-HSD stock and consumption statement indicating the daily consumption of the HF-HSD for Marine Vessel

9.3.9 Contract must provide a detailed supply base inventory on weekly basis, including but not limited to the Wellheads / Drilling Bits / Liner Hanger / Casing Accessories and other consumable items along with bulks available at base.

10.0 CONTRACTOR'S SPECIAL OBLIGATIONS:

10.1 It is expressly understood that Contractor is an independent Contractor and that neither it nor its employees and its subcontractors are employees or agents of Company. However, Company is authorized to designate its representative, who shall at all times have access to the Drilling Unit, Marine Vessels, Bundle Services, related equipment and materials and all records, for the purpose of inspecting and designating the work to be performed hereunder by the Contractor. The Contractor may treat Company's representative at location as being in charge of all Company's and Company designated personnel at location. The Company's representative may, amongst other duties, observe, test, check, examine records kept at well site by Contractor and control implementation of all the services provided under Bundle Service works performed by Contractor.

10.2 Compliance with Company's Instructions: Contractor shall comply with all instructions of Company consistent with the provision of this Contract. Such instructions shall, if Contractor request, be confirmed in writing by Company's representative.

10.3 Contractor shall arrange for transportation of all equipment, materials, consumables etc. from the port of importation/point of origin to the Contractor’s shore base at Kakinada and back at the end of the work at their own expense. Arrangement of Permits and payment of Entry Tax, if any, for bringing Contractor’s equipment / materials / consumables to shore base at Kakinada shall be Contractor’s responsibility and at their cost.

10.4 All the equipment, materials, consumables etc. supplied by the Contractor to the Company under the contract, shall be stored in Contractor’s facilities at Kakinada and shall

be delivered to Drilling Unit as per operational requirement as and when instructed by the Company.

10.5 Contractor should provide the list of eligible items to be imported in the format specified in Proforma-A for issuance of Essentiality Certificate to Custom office for clearance of goods from customs at concessional (nil) rate of customs duty. Similarly, Contractor shall furnish list of all remaining and balance items imported under the Essentiality Certificate for re-export at the end of the Contract and prior to de-mobilization

10.6 In case the Contractor imports the equipment/materials/consumables etc. on re-export basis, the Contractor shall ensure for re-export of the equipment and all consumables and spares (except those consumed during the contract period) and complete all documentation required. Company will issue necessary certificates etc. as required. The Contractor should arrange for re-export of equipment / materials / consumables within 60 days of notice of de-mobilization issued by the Company. If the re-export is not completed within the specified period, customs duty, penalty etc. levied by customs authorities for such delay shall be to Contractor's account and same will be deducted by the Company from Contractor's bills and security deposit.

Note: 'Re-export' used herein or elsewhere in the Contract shall also mean and include Block Transfer or re-export to SEZ as permissible under applicable customs rules / regulations and provided Company is out of charge after Block Transfer or re-export to SEZ.

11.0 CONFIDENTIALITY OF INFORMATION: All information obtained by contractor

in the conduct of operations hereunder, shall be considered confidential and shall not be divulged by Contractor or its employees to anyone other than company's representative. This obligation of contractor shall be in force even after the termination of the Contract. In this regard, the contractor has to sign a Non-Disclosure Agreement with the company.

12.0 ASSOCIATION OF COMPANY'S PERSONNEL:

12.1 Company may depute one or more than one representative (s) / engineer (s) to act on its behalf for overall co-ordination and operational management at location.

Company's representative will be vested with the authority to order any changes in programme within the scope of work to the extent so authorized and notified by the Company in writing. He shall liaise with the Contractor and monitor progress to ensure timely completion of the jobs. He shall also have the authority to oversee the execution of jobs.

12.2 Company's representatives shall have free access to all the units of the bundle services and Marine Vessels of the Contractor during operations as well as idle time for the purpose of observing / inspecting the operations performed by the Contractor in order to judge whether, in Company's opinion, the Contractor is complying with the provisions of the Contract.

12.3 The monitoring and overseeing of the jobs under the Contract by the Company's personnel / representative shall not absolve or reduce the obligations of the Contractor under the Contract in any manner.

13.0 RIGHTS AND PRIVILEGES OF COMPANY:

13.1 Company shall be entitled to check Contractor's items before the Commencement Date. If they are not found in good order or do not meet specifications as per Section II or in case of non-availability of some of the Contractor's items listed therein, the Contractor may not be allowed for commencement until the Contractor has remedied such default.

13.2 To change the drilling programme, mud programme, well depths to complete or abandon any well at any time.

13.3 To approve the choice of sub-contractors for any essential third-party contract, concerning materials, equipment, personnel and services to be rendered by Contractor. Sub-contract may be entered into by Contractor only after Company's approval.

13.4 To check, at all times, Contractor's stock level, to inspect Contractor's equipment and request for renovation or replacement thereof, if found in unsatisfactory condition or not conforming to regulations or specifications.

13.5 To order suspension of operations while and whenever:

a) Contractor's personnel are deemed by Company to be not satisfactory as per the contractual requirements required for the Contractor's personnel.,

b) Contractor's equipment does not conform to regulations or to the specifications laid down in the Contract.

c) Contractor's equipment turns into a danger to personnel on or around the rig or to the well.

d) Contractor's insurance in connection with the operations hereunder is found by Company not to conform with the requirements set forth in the Contract.

e) Contractor fails to meet any of the provisions in the Contract.

f) Any shortage in key/additional (compulsory) personnel and inadequacy of other personnel.

g) Contractor is found non-compliant to HSE requirement as per Safe Operating Practices or applicable law.

13.6 To reduce the rates reasonably, at which payments shall be made if the Contractor is allowed to continue the operation despite having certain deficiency in meeting the requirements as per provision in the contract.

14. INGRESS AND EGRESS AT LOCATION:

Company hereby agrees that it shall provide Contractor with all necessary rights to the location where the well is to be located including any permission / licenses as required for the performance by Contractor of all works contemplated by this Agreement. In the event of any restrictions, conditions, or limitations in Company's permit, which would affect the free right of ingress, egress and possession to be exercised by Contractor hereunder, its employees or its subcontractors, Company agrees promptly to advise Contractor in writing with respect to such restrictions, conditions or limitations and Contractor agrees to observe the same. Should any permits / licenses / Certificates - as applicable be delayed because of objections of statutory authorities in respect of Contractor's issue, the Contractor should make good and take corrective actions immediately and in that case no rate will be payable to the Contractor. Should Contractor be denied access to the location of drilling operations due to lack of compliance of any

permits or licenses required by the Company, time lost as a result thereof shall be compensated at the ISDR / ODR for any particular service (s).

15.0 <u>MARINE VESSELS LICENCES</u>:

Contractor agrees that it shall secure Permits and Licenses for operations of the Marine Vessels in Indian waters, if required and Contractor shall pay any expenses in this regard. It is the responsibility of the Contractor to obtain Naval Defense Clearance of Marine Vessels prior to commencement of Contract from Ministry of defense (MoD) through Ministry of Petroleum and Natural Gas (India) (MoP&G), etc. at their cost.

It is the responsibility of the Contractor to obtain all necessary permissions and clearances from the concerned statutory authorities, for operating all the Services & marine vessels in Indian waters, at their cost.

However, to obtain Naval defense Clearance and other necessary permissions and clearances from the statutory authorities, the Company shall issue forwarding letter upon request from Contractor supported by all relevant valid documents.

Bidder to confirm that they would obtain the permission of DG Shipping for deploying the offered marine vessels in Indian waters, as per the DGS notification F.No.16-1701U5 / 2021-SD-DGS Dated: 20.10.2022.

The DG Shipping Guidelines and Rules shall be binding to the Bidder / Contractor for deployment of Marine Vessels.

The contractor shall maintain all the required Statutory Certificates / Clearance / Permit valid throughout the duration of the contract. Zero-day rate will be applicable if the same is not complied with by the contractor.

The Contractor shall provide an undertaking to maintain all the required Statutory Certificates / Clearance / Permit valid throughout the duration of the contract. Further, Contractor to provide the list of all the Statutory Certificates / Clearance / Permit which the supplier is required to maintain under statutory requirement for operations of the

Marine Vessels in Indian waters along with expiry dates of all such documents during the time of initial mobilization.

16.0 DAMAGE TO PIPELINE, PLATFORMS OR DRILLING RIGS:

Contractor shall be responsible and hold Company harmless for any damages to pipeline, platforms, drilling rigs, vessels (other than vessels subcontracted by Contractor under this Contract) and damage or loss of materials or equipment of Company and/or other third-party materials or equipment in the area of operation for reasons attributed to the gross negligence of the Contractor, provided that Contractor's liability shall not exceed US Dollars Five Hundred Thousand per occurrence. The Company shall be responsible for and shall indemnify and hold Contractor harmless for all amounts in excess thereof.

17.0 SUBSEQUENTLY ENACTED LAWS: Subsequent to the date of issue of letter of award if there is a change in or enactment of any law or interpretation of existing law, which results in additional cost / reduction in cost to Contractor on account of the operation under the Contract the Company / Contractor shall reimburse / pay Contractor / Company for such additional / reduced costs actually incurred subject to the submission of documentary evidence by Contractor / Company.

18.0 RESPONSIBILITY FOR LOSS OF OR DAMAGE TO THE EQUIPMENT/ MARINE VESSELS:

18.1 Except as otherwise specifically provided in this Contract, any damage to or loss of the Contractor's Equipment and/ or Marine Vessels (which, for the purpose of this Article 18.1 shall be deemed to include all Contractor's and its sub-contractors equipment and Marine Vessels) and regardless of the cause or reason for said loss, shall be the loss of the Contractor its underwriters or insurers and Contractor agrees to protect, defend, indemnify and hold the Company, its co-licensees and its and their affiliate companies, agents, employees, invitees, servants, their underwriters or insurers (other than Contractor's) and their employees harmless against any claim whatsoever or responsibility for any damage to or loss of the equipment or property of Contractor or Contractor's sub-contractors furnished or intended for use in the operations herein undertaken.

18.2 If the Marine Vessels or any part thereof is lost or damaged beyond repair or becomes an actual or constructive compromised, arranged loss or obstruction to navigation or the operations of the Company or is otherwise abandoned, the Contractor shall, if required by the Company or by the law's regulation or order of Governmental authorities or agency remove the Marine Vessels at Contractors own cost from Offshore area to the satisfaction of the Company. If the Contractor unreasonably delays in removing the Marine Vessels or any part thereof, the Company may remove it and the Contractor shall indemnify and reimburse the Company for all cost and expenses incurred by the Company in connection therewith. Any expense incurred by the Company in connection with or for locating the area/price of such loss/ damage and/or to ascertain whether such loss/damage has resulted in any pollution or not, shall also be reimbursed by the Contractor to the Company.

18.3 DAMAGE OR LOSS OF THE MARINE VESSELS: If any of the Marine Vessels is declared to be a total loss and / or construed to be total loss then the same must be replaced.

18.4 DAMAGE OR LOSS OF COMPANY EQUIPMENT: Contractor shall assume the risk of and shall be solely responsible for damage to and loss or destruction of materials and equipment or supplies furnished by Company. In case there is a loss or damage to Company's equipment for causes attributable to Contractor, the Contractor shall compensate Company.

18.5 USE OF CONTRACTOR'S EQUIPMENT: Subject to Clause No. 52 of SCC, the Company shall have the right to use the Marine Vessels and all of Contractor's equipment and personnel provided under this Contract during such times as the Company or both Company and Contractor are engaged in bringing a well under control and Marine vessels will perform all activities related to well control.

19.0 INDEMNITY AGREEMENTS:

19.1 Contractor agrees to protect, defend, indemnify and hold Company its co-leases, its agents, if any, its other contractors and/or their employees harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, costs, liens, rights in rem,

and judgments of every kind and character, without limit, which may arise in favour of Contractor, Contractor's employees, agents, sub-contractors or their employees, on account of bodily injury or death of Contractor's employees, agent, sub- contractor or sub-contractor's employee or damage to said employee's property as a result of the operations, contemplated hereby, regardless of whether said claims, demands, or causes of action arise out of negligence or otherwise, in whole or in part, unseaworthiness or other fault, including pre-existing conditions of Company, its contractors other than the Contractor, sub-contractors, partners, Joint Ventures, their employees or Agents.

19.2 Company agrees to protect, defend indemnify and hold Contractor and its sub-contractors, its agent and its affiliates, its other contractors and / or their employees harmless from and against all claims, suits, demands and causes of action, liabilities, expenses, costs, liens, rights in rem and judgments of every kind and character, without limit, which may arise in favour of Company, Company's employees, Agents, invitees, contractors (other than Contractor) and sub-contractors or their employees, on account of bodily injury or death of Company's employees, agents, invitees, contractors (other than Contractor) and sub-contractors or damage to said employees or its property (including any property of Company) as a result of the operations contemplated hereby, regardless of whether or not said claims, demands or causes of action arise out of the negligence or otherwise in whole or in part, unseaworthiness or other faults, including pre-existing conditions of Contractor, its sub-contractors, partners, Joint Ventures, employees or agents.

20.0 POLLUTION AND CONTAMINATION:

Notwithstanding anything to the contrary contained herein, it is understood and agreed by and between the Contractor and Company that the responsibility for pollution or contamination shall be as follows:

(a) The Contractor shall assume all responsibility for cleaning up and controlling pollution or contamination which originates above the surface of the water from spills or fuels, lubricants, motor oils, water base & synthetic based drilling fluid and attendant cuttings, pipe dope, paints solvents, ballast, bilge and garbage wholly in Contractor's possession and control and directly associated with Contractor's equipment and facilities,

provided, however, Contractor's liability shall be limited to US Dollars One Million (US$ 1 Million) whereafter the Company shall indemnify and hold harmless Contractor for amounts in excess.

(b) Except as otherwise provided in article 20(a), Company shall assume all responsibility for (including control and removal of the pollutant involved) and shall protect, defend and save the Contractor harmless from and against all claims, demands, and causes of action of every kind and character arising from all pollution or contamination, other than that described in sub-clause (a) above, which may occur from gross negligence of Contractor but not limited to, that which may result from fire, blowout, cratering, seepage of any other uncontrolled flow of oils, gas, water or other substances, as well as the use or disposition of oil emulsion, oil base or chemically treated drilling fluids, contaminated cuttings or caving, lost circulation and fish recovery materials and fluids provided however, Contractor's sole liability under this sub-clause is to reimburse Company US Dollars One Million (US$ 1 Million) of cost paid/incurred by Company in control of the pollutant, clean-up costs, or damage to a third party, provided said pollution results from contractor's gross negligence, where after the Company shall indemnify and hold harmless Contractor for amounts in excess.

(c) In the event a third party commits an act or omission which results in pollution or contamination for which either the Contractor or Company, for whom such party is performing work, is held to be legally liable the responsibility therefore shall be considered as between the Contractor and Company, to be the same as if the party for whom the work was performed and all of the obligations respecting defence indemnity, holding harmless and limitation of responsibility and liability as set forth in (a) and (b) above, shall be specifically applied.

(d) Subject to Waste Management Clause, all the packing materials/empty drums of Contractor’s supplied consumable materials like cement, chemicals, additives, liquids, etc. is the property of Contractor. The storage and disposal of these items as per prevailing pollution control laws is the responsibility of the Contractor.

21.0 WAIVERS AND AMENDMENTS:

It is fully understood and agreed that none of the terms and conditions of the contract shall be deemed waived or amended by either party unless such waiver or amendment is executed in writing by the duly authorized agents or representatives of such party. The failure of either party to execute any right of termination shall not act as a waiver or amendment of any right of such party provided hereunder.

22.0 DEMOBILISATION & RE-EXPORT:

22.1 The Contractor shall arrange for and execute demobilization of the entire Tools/Equipment/Spare/Accessories/Manpower, shore base services and Marine Vessels etc. upon receipt of notice for demobilization from Company. Demobilization shall mean completion / termination of the contract and shall include dismantling of the complete Bundle Service package, shore base services and Marine Vessels, its accessories/equipment, including the manpower and re-export of the complete Bundle Service package and Marine Vessels (if re-exportable), its accessories/equipment, unutilized spares and consumables at the cost of the contractor. Demobilization shall be completed by Contractor within 60 days of issue of demobilization notice by Company. Immediately after re-exporting the Bundle Service package and Marine Vessels, its accessories, equipment and the unused spares and consumables, Contractor shall submit the detail re-export documents to Company as documentary proof of re-exporting the complete Bundle Service package and Marine Vessels, its accessories, equipment and the unused spares and consumables. In case of failure to re-export any of the items as above within the allotted time period of 60 days except under circumstances relating to Force Majeure, Company reserves the right to withhold the estimated amount equivalent to the Customs Duty and/or penalty leviable by customs on such default in re-export from Contractor's final settlement of bills and Performance Security.

22.2 In the event all / part of the equipment etc. are transferred by Contractor within the country to an area where nil Customs Duty is not applicable and/or sold to a third party after obtaining permission from Company and other appropriate government clearances in India, then Contractor shall be fully liable for payment of the Customs Duty.

22.3 Contractor must furnish an undertaking that "the equipment imported and also spares & accessories which remained unutilized after the expiry of the contract, would be

re-exported at their own cost after completion of contractual obligation after observing all the formalities/rules as per Customs Act or any other relevant Act of Govt. of India applicable on the subject". In case of non-observance of formalities of any provisions of the Customs Act or any other Act of Govt. of India, the Contractor shall be held responsible for all the liabilities including the payment of Customs Duty and penalties to the Govt. on each issue. Non-compliance of these provisions will be treated as breach of contract and their Performance Bank Guarantee will be forfeited.

22.4 In the event all / part of the equipment etc. are transferred by Contractor after expiry/termination of the contract within the country to another the Company for providing services, and/or sold to a third party, Contractor shall obtain all necessary Govt. of India clearances including the Customs formalities for transferring to another the Company and/or sale of the Bundle Service package and Marine Vessels, its accessories, equipment and the unused spares and consumables to a third party. Company will not be responsible for any non-compliance of these formalities by Contractor. Payment of Customs Duty and penalties (if any) imposed by Govt. of India or Customs authorities for transferring the items in part or in full to an area where Nil Customs Duty is not applicable, or sale of the items shall be borne by the Contractor and Contractor indemnifies Company from all such liabilities.

22.5 'Re-export' used herein or elsewhere in the Contract shall also mean and include Block Transfer or re-export to SEZ as permissible under applicable customs rules / regulations and provided Company is out of charge after Block Transfer or re-export to SEZ.

23.0 CONFIDENTIALITY:

a) During this Contract, Company and its employees, agents, other contractors, sub-contractors (of any tier) and their employees etc. may be exposed to certain confidential information and data of the Contractor. Such information and data shall be held by the Company, its employees, agents, other contractors, sub-contractors (of any tier) and their employees in the strictest Confidence and shall not be disclosed to any other party except on a need-to-know basis.

b) However, the above obligation shall not extend to information which:

1. Is, at the time of disclosure, known to the public.

2. Lawfully becomes at a later date known to the public through no fault of Contractor.

3. Is lawfully possessed by Contractor before receipt thereof from Company.

4. Is disclosed to Contractor in good faith by a third party who has an independent right to such information.

5. Is developed by Contractor independently of the information disclosed by Company; or Contractor is required to produce before competent authorities or by court order.

6. Is required to be disclosed on the direction of Court or any statutory authority.

23.1 Also, the Contractor agrees to be bound by professional secrecy and undertake to keep confidential any information obtained during the conduct of drilling operations, including, but not limited to, formations penetrated, results of testing, and surveying of the well. And to take all-reasonable steps to ensure the Contractor's personnel likewise keep such information confidential.

23.2 This obligation shall keep in force even after the termination date and until such information will be disclosed by Company.

23.3 Contractor shall handover to Company all Company's documents or drafts concerning operations carried out and which are still in its possession before the end of the contract period.

24.0 <u>SAFETY:</u>

Contractor shall take all measures necessary or proper to protect the personnel, work and facilities and shall observe all reasonable safety rules and instructions. No smoking shall be permitted outside the living quarters, and welding jobs will be carried out with full safety precautions. Company employee also shall comply with safety procedures/policy.

EFFLUENT: Regular checks are to be made to ensure that there is no leakage/overflow of effluents from the Marine Vessels into the sea. This should be complied with as per statutory norms.

25.0 DISCIPLINE:

Contractor shall carry out operations hereunder with due diligence and in a safe and workman like manner according to good international oil field practice.

The Contractor shall maintain strict discipline and good order among their respective employees and their respective Sub-contractors, if any, and shall abide by and conform to all rules and regulations promulgated by the Company and Contractor governing the operations at the assigned worksites. Should the Company feel with just cause that the conduct of any of the Contractor's personnel is detrimental to Company's interests; the Company shall notify Contractor in writing the reasons for requesting removal of such personnel. The Contractor shall remove and replace such employees at their expense within 15 days if replaced by National Crew and 30 days if replaced by Expatriate from the time of such instruction given by the Company. If no replacement has been provided within this time the Company shall reduce the daily rate by the amount specified for this category under Clause No: 7.0 above until such replacement has been provided. The person so removed shall not be employed again without the prior written consent of the Company. Contractor shall not permit any of its employees, representatives, agents or sub-contractors to engage in any activity which might reasonably be considered to be contrary or detrimental to the interest of the Company.

Deficiency: In the event of the Contractor failure to strictly adhere in providing the minimum requirements of key personnel as set out in the Technical Specification and Scope of Work, the penalty shall be levied.

26.0 DEFICIENCY PENALTY:

26.1 If operation is suspended for non-availability of key personnel, Contractor will be penalized as defined under Clause Nos 6.1 and 6.2 above.

26.2 In case of short deployment / deficiency on account of sickness / accident, fifteen (15) days will be allowed for replacement without any reduction in Day Rates subject to normal progress of the performance of Work. Beyond this, the Clause No: 7.0 above will be applicable.

27.0 DEFICIENCIES:

Contractor's all equipment shall be always maintained by Contractor in sound and efficient operating condition. Should the performance of Contractor's equipment and Bundled services becomes unsatisfactory or performance of work hereunder be reduced because of defective Contractor's furnished equipment or by reason of Contractor's incompetence or negligence, OIL shall give Contractor written notice specifying the causes of its dissatisfaction to correct the specified deficiency within 30 days failing which OIL shall have the right to terminate this Contract by giving thirty (30) days advance written notice to the Contractor, unless the specified deficiency is corrected within such thirty (30) days period. In this event no demobilization fees will be payable by the Company notwithstanding the provision contained in the Contract. OIL shall recover the mobilization charges, if any, paid as defined in "Section-IV: Schedule of Rate" in case the deficiency occurs during pendency of the Contract, on pro-rata basis for the period of performance, in addition to invoking of performance bond due to failure of the Contractor in not executing the Contract faithfully.

28.0 LOSS OR DAMAGE (BEYOND REPAIR) OF SUB-SURFACE EQUIPMENT:

28.1 Notwithstanding any provision under this Contract to the contrary, Company shall assume liability except in the event of Willful Misconduct on the part of the Contractor for loss or damage to the Contractor's equipment/tool in hole below rotary table, subject to conditions prescribed herein below. Company shall at its option either reimburse the Contractor for the value of lost/damaged equipment/tool as declared in the import invoices (for foreign items) / purchase invoice (for indigenous items) at the time of mobilization or subsequent replacement/addition of the same equipment/tool or CIF value declared in the contract in the list of imported items (for foreign items) whichever is lower for any such loss or damage, less depreciation @ 3% per month from the date of start of the Contract up to a maximum depreciation equivalent to 50% of CIF value as indicated by the Contractor or at its option to replace similar equipment/tools and any transportation expenses incurred in connection herewith. All such cost shall be payable by Company, provided the equipment/tool is not covered under Insurance and provided such equipment/tool are included in the exclusion list of the Insurance Policies submitted by the Contractor in terms of Clause 14.16 (vii) under GCC of the Contract or all such cost shall be payable only after Contractor furnishes notarized undertaking in the prescribed

format to the extent that the particular equipment/tool in question is not covered by Contractor's insurance. For claims of lost/damaged equipment/tools, Contractor must intimate the Company of their intention to lodge claim in writing within one month of the declaration of lost/damaged tool by Company and final claim thereof must be made within six months of the date of the lost/damaged tool or before expiry of the Contract, whichever is earlier. The inspection of recovered equipment/tool from downhole needs to be made by Company Representative before submission of the invoice by Contractor.

28.2 OIL shall declare the Loss in Hole immediately after the fishing operation is called off upon non-retrieval of the downhole items and intimate the Contractor, so that replacement and claim for the loss of downhole items can be done within the stipulated time. The contractor should replace the lost tool(s) within a stipulated time of 30 Days from the date of declaration of Lost in Hole by the company.

NOTES: (i) The claim on account of Loss /damage should be claimed within six months of the incident or before expiry of the Contract, whichever is earlier.

(ii) Company shall certify the Loss/Damage in Hole immediately upon receiving the intimation from the Contractor, so that replacement and claiming of Loss/Damage can be done within the stipulated time.

(iii) No mobilization cost would be payable towards the replacement of LIH tools.

28.3 DOCUMENTATION OF LOSS: Whenever any loss, damage or destruction to any of the Contractor's Equipment occurs, as stated in Clause above, the Contractor shall immediately notify the same to Company describing the loss/damage. Whenever the Contractor makes any claim pursuant to the provisions under the above Clause, the Contractor shall furnish in support thereof as noted below:

a) List of the Equipment lost or damaged.

b) Extent of the damage.

c) Particulars of import, Customs assessed Bill of entry & invoices.

d) Vouchers, invoices or any other documents indicating the date of first use of the Equipment in India.

e) Costs of repairs, if any, supported by evidence of the same.

f) Documentary evidence or self-declaration as per Format provided that the particular tool(s)/equipment in question is/are not covered by Contractor's insurance.

29.0 CERTIFICATE OF INSURANCE:

The following additional insurance to be provided in addition to the insurance as spelt out in the GCC.

29.1 **All-Risk Equipment Insurance** covering loss of or damage to the property of the Contractor (including but not limited to the Contractor Items, property and equipment owned, leased or rented by, or otherwise in the care, custody or control of, Contractor) for the full replacement value thereof. Coverage will be on an "all risks" basis of physical loss of or damage to property and equipment owned, leased or rented by, or otherwise in the care, custody or control of, Contractor, including equipment, specialty tools and property used in the Services and/or course of construction, including transit. Such insurance will be amended to include coverage for the perils of flood, earthquake (including subsidence) and exceeding the lifting capacity of machinery in operation.

29.2 MARINE INSURANCE: Marine Insurance Policy shall be all risk London standard Drilling Barge form and other comparable forms or coverages used in American and foreign markets on Marine Vessels owned or chartered by Contractor and utilised in the performance of this Contract with policy limits equal to the value of the equipment.

30.0 CERTIFICATE OF INSURANCE:

Before commencing performance of the Contract, Contractor shall upon request, furnish the Company with certificates of insurance including (1) kinds and amounts of insurance as required herein, (2) Insurance Company or Companies carrying the aforesaid coverages, (3) effective and expiration dates of policies, (4) that the Company will be given thirty (30) days written advance notice for any material change in the policy, (5) waiver

of subrogation endorsement has been attached to all policies, (6) the territorial limits of all policies. If any of the above policies expire or are cancelled during the term of this Contract and Contractor fails for any reason to renew such policies, then the Company may replace same and charge the cost thereof to Contractor.

Should there be a lapse in any insurance required to be carried by Contractor as prescribe in this Contract, for any reason whatsoever, losses resulting therefrom shall be for the sole account of Contractor.

31.0 FORCE MAJEURE:

31.1 CONDITIONS FOR FORCE MAJEURE:

In the event of either party being rendered unable by Force Majeure to perform any obligation required to be performed by them under this Contract, the relative obligation of the party affected by such Force Majeure shall, upon notification to the other party be suspended for the period during which such cause lasts.

The term “Force Majeure” as employed herein shall mean floods, tempest, war, civil riot, fire and Acts, Cyclone and Cyclones Consequences, Rules and Regulations of respective government of the two parties namely Company and the Contractor, directly affecting the performance of the Contract.

Upon the occurrence of such cause and upon its termination, the party alleging that it has been rendered unable as aforesaid thereby, shall notify the other party in writing within seventy-two hours of the alleged beginning and ending thereof, giving full particulars and satisfactory evidence in support of its claim.

Time for performance of the relative obligation suspended by the Force Majeure, shall then stand extended by the period for which such cause lasts.

Such Force Majeure situations shall be paid at Force Majeure Rate for a period of first thirty days, for each occasion, after which zero rate shall be payable to the Contractor after which either party shall have the right to terminate the Contract if such `force majeure' conditions continue beyond successive 60 (Sixty) days, for each occasion, with prior

written notice of 15 days, provided termination of the Contract does not result into safety hazard to the life and property on account of withdrawal of operations or the operation is at critical stage. The Company shall have the absolute right to decide whether any safety hazard exists, or operation is in a critical position, and the decision of the Company shall be binding upon the Contractor.

31.2 WEATHER AND WAITING ON DAY LIGHT:

The parties hereto agree that waiting on weather/ waiting on day light shall not be considered as Force Majeure. Weather in this case means temporary conditions of wind, waves or tides, which make it unsafe or hazardous to conduct operations hereunder. The Individual Service Day Rates (ISDR) shall be applicable during these conditions.

32.0 HSE POLICY:

The contractor shall forward HSE policy to the Company along with the bid. The Contractor should have a valid HSE Management System (HSEMS) for each quoted Services certified as per ISO: 9001, ISO: 14001 & OSHAS: 18001 / ISO: 45001/ISRS and should keep the certificate(s) valid during execution of contract period. In case certification is not there at the time of commencement of operations, the Contractor to submit details of their HSE management system approved by its highest authority not lesser than a director.

33.0 FISHING OF EQUIPMENT:

33.1 In the event any of the Contractor's OR Company OR Company's other Contractors Tools / Equipment is lost / stuck in the well or at site, then the Company shall, at its expense, attempt to recover or retrieve the same. All necessary fishing tools and services, as laid down in the Contract or available with the Drilling Unit, shall be provided by the Contractor as and when the Company decides to fish for any of the Contractor's OR Company OR Company's other Contractors Tools / Equipment. The Contractor shall have full responsibility and liability for such Operations, and the Company shall render support in an advisory capacity at all times in connection with such fishing operations.

33.2 If such fishing activity occurs due to Contractors' fault, then "Zero Rates" will be applicable for the entire Bundle Services during the period of fishing operations.

34.0 DIESEL & DRILL WATER:

The Company shall supply HSD for the Bundle Services Units on the Drilling Unit only and for Marine Vessels at Shore Base. The contractor shall arrange delivery of HF-HSD to Marine Vessels, which shall be supplied by the Company. HF-HSD shall be transported and supplied at Shore Base by the Company. However, Vessels may also have to collect HF-HSD from any other location whenever directed / arranged by Company.

Drill water for Drilling Unit, Marine Vessels are to be supplied by Contractor on chargeable basis to Company as per actual quantity received at Drilling Unit and Marine Vessels.

35.0 RADIOACTIVE SOURCES AND EXPLOSIVES:

The Company acknowledges, that it is aware that the radioactive sources used in Operations by the Contractor are potentially dangerous both to humans and to animals and should any such source be lost in the well, special precautions must be taken in fishing operations in order that the container of the source is not broken or damaged, and that such source if not recovered must be isolated by cementing it in place or by some other appropriate means; and the Company by requesting the Contractor to perform any service involving the use of radioactive material accepts the possibility of such risks and agrees that the Contractor shall not be liable or responsible, except in case of wilful misconduct and or Gross Negligence on the part of the Contractor for any injury to or death of persons or damage to property (including but not limited to, injury to or loss of a well or reservoir) or any other loss or damage whatsoever, direct or consequential, irrespective of the cause, whether caused by the Contractor's personnel or Equipment or otherwise, arising from or in any way connected with the use or placing by the Contractor of radioactive material in a bore hole, and the Company agrees that it shall absolve, indemnify and hold the Contractor harmless except in case of wilful misconduct and or Gross Negligence on the part of the Contractor from and against all liability for any and all losses, costs, damages and expenses incurred or sustained by the Company or any other person resulting from

any such use of radioactive material. The Contractor shall provide the Company complete information on the construction of radioactive sources, pressure vessels and shields and certificates on usability and safety. The Contractor shall not use any material, which is not certified by the International Atomic Energy Agency (I.A.E.A) for use under the conditions prevailing in the well.

The Contractor must be responsible for provisions of proper storage and safe transportation of Radioactive sources and explosives at Shore base, Marine Vessels and Drilling Unit as per the statutory requirement.

In case of radio-active source lost in hole during operation, action will be initiated as per AERB guidelines.

36.0 WELL CONSUMABLES / DRILL BITS:

For well consumables and Drill Bits, the reimbursement shall be as per actual consumption as per the "Schedule of Rates".

37.0 PERMITS, CLEARANCES AND LICENSES

Contractor agrees that it shall secure permits, clearances and licenses for operations of the Bundled services in Indian waters, if required and Contractor shall pay any expenses in this regard. Contractor shall take required License(s) from the appropriate regulatory agencies of Govt. of India at Contractor's cost. However, the Company shall assist the Contractor in obtaining the requisite permit, clearances and licenses.

38.0 LOADING OF EQUIPMENT:

Contractor shall make available all of Contractor's and its Sub-contractor's material at designated shore base at Kakinada as per the operational requirement. Contractor agrees to transport Contractor's and its Sub-contractor's material to the drilling location nominated by Company for loading and unloading on board the Drilling Unit at Contractor's cost.

39.0 HAZARDOUS WASTE:

The Contractor shall be liable for the storage, handling, transportation (on land), manifest and disposal through authorised agency of any spent or used chemicals or other hazardous waste generated at its storing facilities in Kakinada.

40.0 SUBSEA WELLHEAD SERVICES:

Contractor must make available minimum 2 numbers of subsea Well Heads assemblies comprising of items quoted as per Scope of Work all the time on the Drilling Unit/Shore base. Contractor would have to procure the subsea well heads from any of the vendors as listed in the vendor list.

(i) Dril-Quip

(ii) Cameron, Schlumberger

(iii) GE Vetco Gray

(iv) Technip FMC

In case there is shut down / interruption in operations at the drilling unit on account of non-availability of sub-sea wellheads or its items or required wellheads tools and services as per scope of work (due to factors attributable to the Contractor), in addition to deduction as per clause 6.2 above, Contractor will not be eligible for any of the Individual Services' Day Rates for all other services.

41.0 LIMITATION OF LIABILITY:

Notwithstanding any other provisions incorporated elsewhere in the Contract, the aggregate liability of the Contractor in respect of this Contract, whether under Contract, in tort or otherwise, shall not exceed 50% of the Contract Price, provided however that this limitation shall not apply to the cost of repairing or replacing defective equipment by the Contractor, or to any obligation of the Contractor to indemnify the Company with respect to Intellectual Property Rights.

42.0 CUSTOMS DUTY:

42.1 The Company will issue Essentiality Certificate for import of eligible Goods in terms of Custom Notification No. 50/2017-Customs dated 30th June-2017, further amended vide latest Custom Notification No. 45/2025- Customs dated 24.10.2025 (S. No. 229 of Table I, List 16, and Condition No. 28), on submission of clear, legible and valid documents (including detailed invoice, technical justification, undertaking and affidavit, EC statement etc.) by the contractor to OIL at least with clear 15 working days' notice. OIL shall not be liable in whatsoever manner for the rejection of their claims for zero customs duty by any of the authorities due to any discrepancy in the documents submitted by the contractor. Similarly, Company/ Append will issue requisite undertaking for transfer of EC, in respect of the goods already imported under Essentiality Certificate and to be transferred to this contract, on submission of clear, legible and valid documents by the Contractor to OIL.

However, in terms of CBIC Circular No. 189/01/2023-GST dated 13.01.2023, if the standard/merit-rate of IGST itself is lower than 18% on the specified goods, then such lower rate of IGST would apply, along with exemption from BCD & SWS, upon submission of EC.

The bidder while quoting would need to consider the duty drawback as per notification No. 23/2008 dated 01.03.2008 available to them upon re-export of the equipment, if any. The bidder should also note that input tax credit would also be available to them on the IGST paid by them excluding duty drawbacks and this aspect should also be considered by them while quoting their rates.

Similarly, such specified goods required for petroleum operations if procured from domestic sources would attract 18% concessional Rate of GST (IGST or CGST & SGST/UTGST) as per GST-Rate Notification No. 3/2017 dtd. 28.06.2017 and amended vide Notification No. 08/2022 dtd. 13.07.2022 and 11/2025-IGST(R) dated 17.09.2025 against issuance of EC by DGH for which OIL shall issue the recommendatory letter. If the standard/merit-rate of GST on the specified goods itself is 18% or lower, then such lower rate of GST would apply directly i.e. without invoking Notification No. 3/2017- IGST(R).

Bidders shall take note of the prevailing customs notifications including the latest Notification No. 45/2025- Customs dated 24.10.2025 issued by customs. Contractor should consider concessional Customs Duty only for those items appearing in List-16

therein. Items of their import other than those appearing in List-16 of the said gazette notification shall be considered as duty payable on merit basis in their respective bid. OIL shall issue the requisite undertaking/certificate on request from Contractor for availing concessional rate of customs duty only against the items explicitly covered under List-16 of Customs Notification No. 45/2025- Customs dated 24.10.2025 or against any other item(s) subsequently declared by the competent authority during the tenure of the contract to be duty exempted/concessional. However, in the event of refusal/denial by Customs Authority to accord exemption/concession of Customs Duty against import of items which are explicitly covered under List 16 of 45/2025- Customs dated 24.10.2025 for reasons not attributable to Contractor, such applicable customs duty shall be reimbursed at actual by OIL to the Contractor on submission of documentary evidence.

Items other than those appearing in List-16 of the said gazette notification, if to be imported by the Contractor for the purpose of execution of contract against this tender, the same shall be considered as duty payable on merit basis and the applicable customs duty thereof must be included by the contractor in their respective bid value. OIL will not issue any Undertaking / Certificate towards customs duty concession / exemption for those items (not included in List-16 of Notification) and the duty payable on merit shall be borne by the Contractor. However, any other item if subsequently notified by the competent authority to be Duty free/concessional during the tenure of the contract, OIL will issue requisite Certificate/Undertaking for Contractor to avail the Customs Duty benefit, and the duty benefit must be passed on to OIL. Additionally, for all those items against which the contractor considers the Customs Duty on merit, the list specifying the Customs Duty Rate (percentage) may be furnished, so that subsequent increase/decrease in Customs Duty, if any shall be reimbursed/recovered by OIL as the case may be on documentary evidence. Contractors should submit the list of items which are to be imported for execution of the contract against this tender as per Proforma-A prudently along with their bid. Undertaking/Certificate for availing concessional rate of Customs Duty shall be issued by OIL only for the eligible items, provide the same are included in the Proforma-A submitted by the contractor.

Note: The above stipulations shall prevail over other clauses if stipulated otherwise elsewhere in the original tender document/previous amendments. However, the

aforementioned notifications are subject to change as per Government guidelines and the provisions ruling at the time of Bid Closing will be applicable.

42.2 Contractor should provide the list of the items to be imported by the Service Provider them under the Contract will be as per the items to be imported as submitted in the format specified in Proforma-A along with their bid for issuance of Recommendatory Letter. Contractor shall made written request to Company immediately after shipment of the goods indicated by them in Proforma-A, along with the Invoices and all shipping documents (with clear 15 working days' notice) requesting Company for issuance of the Recommendatory Letter. Company shall issue the Recommendatory Letter provided all the documents submitted by the Contractor are found in order as per contract. It shall be however, Contractor's responsibility to obtain EC from Customs and clear the goods through customs. Company shall not be liable in whatsoever manner for the rejection of their claims for zero customs duty by any of the authorities. Contractor shall indemnify Company from all liabilities of Customs Duty.

42.3 However, in the event customs duty becomes leviable during the course of contract arising out of a change in the policy of the Government, Company shall be liable for payment of the customs duties leviable in India on Contractor's items as provided in Proforma-A or the actuals whichever is less, provided Contractor furnishes all necessary documents indicating the estimated customs duty at least 10 days in advance. Such payment of Customs Duty shall be arranged by Company and made available to the representatives of Contractor within 3 working days after Contractor submits the undisputed and clear necessary documents / duty assessment papers. Contractor would be responsible for passing such payment to customs authorities at the port of entry. Company's obligation for Customs Duty payment shall be limited / restricted to the tariff rates as assessed by the Customs on the day of clearance, or as on the last day of the stipulated mobilisation period. In case of clearance thereafter, on the CIF value of items in Proforma-A will be frozen and any increase in Customs Duty on account of increase in value on these will be to the Contractor's account. Furthermore, in case the above CIF value is not acceptable to assessing Customs Officer and as a result if any excess Customs Duty becomes payable, it shall be to Contractor's account. Before filing Bill of lading, Bill of entry, the Contractor must consult the Company to avoid payment of excess Customs Duty.

42.4 Contractor shall, however, arrange clearance of such items from Customs and port authorities in India and shall pay all requisite demurrages, if any, clearance fees/charges, port fees, clearing and forwarding agent fees/ charges, inland transport charges etc. Company shall provide all assistance by issuance of necessary letter of authority or other relevant documents and necessary help.

42.5 Contractor must ensure that the spares and consumables imported by them for providing the services under Contract are properly used in executing their job under the Contract in the PEL/ML areas of Company for which EC has been obtained. Contractor shall furnish to Company a certificate as and when the spares and consumables are used/consumed certifying that the spares and the consumables imported by them have been consumed in those ML and PEL areas under the contract for which ECs were obtained by them. In order to avoid any misuse of the spares and consumables imported by the Contractor for providing the services under the Contract, Contractor shall furnish an Undertaking similar to that being furnished by Company to Customs of suitable amount before issue of the Recommendatory Letter.

42.6 In the event of refusal / denial by Customs Authority to accord exemption / concession of Customs Duty against import of items which are explicitly covered under List-16 of Notification No. 45/2025- Customs dated 24.10.2025 or non-issuance of Essentiality certificate in terms of GST Notification no. 45/2025 dated 24.10.2025 for reasons not attributable to the Contractor, Contractor shall charge applicable customs duty on import or goods and service tax on supply as per the HSN code of the product.

43.0 <u>SUSPENSION AT COMPANY'S REQUEST:</u>

The Company shall have the right, without cause, at any time to require the Contractor to suspend the work under this Contract on giving notice to the Contractor specifying the estimated duration of the suspension period. The work shall resume at the end of suspension period or on such other date as the Company may specify to the Contractor by notice in writing. During the suspension period, Contractor shall be paid 'Suspension Rate (SR1) for Bundle Services and Suspension Rate (SR2) for Shore Base Services and Marine Vessels as per the provisions of 'Schedule of Rates'. The Company shall notify the Contractor whether it requires the Contractor to store the Equipment at the Drilling Unit or Shore Base.

The total suspension period during the Contract duration shall not exceed a maximum 2 (two) months. The Company, at its discretion, may add back such suspension period to the original Contract duration at the same rates, terms and conditions by giving 30 (thirty) days' notice to the Contractor before the expiry of the Contract.

However, beyond the said period of 2 (two) months, the suspension period may be extended by the parties at mutually agreed rates, terms and conditions.

44.0 RE-EXPORT:

The Contractor shall complete re-export or block transfer or re-export to SEZ (as permissible under applicable customs rules / regulations and provided Company is out of charge after Block Transfer or re-export to SEZ) formalities upon completion/termination of this Contract against all such items which were brought into India on re-exportable basis and provide the list of the items, equipment, consumables etc. to Company along with all relevant export documents. It will also be the sole responsibility of the Contractor to ensure cancellation & discharge of all undertakings/bonds from Customs authorities within 60 days which were provided by Company at the time of import against this Contract. De-mobilization will not be considered completed, till re-export or block transfer or re-export to SEZ of all equipment and documentation with customs and other regulatory authorities are completed fully and submitted to Company.

45.0 MATERIALS, SUPPLIES, EQUIPMENT & SERVICES:

For all services rendered or materials supplied to Company by Contractor at Company's request, which services or materials are the obligations of the Company, the Contractor shall charge the Company for actual costs as supported by vendor's invoice plus 7.5% fee on FOB value for each procurement costing up to US$ 60,000 and 5% for each procurement costing more than US$ 60,000, thereon to cover costs on account of such procurement and actual cost for services. In addition, transportation costs paid and / or incurred would be reimbursed at actuals against documentary evidence. Company will provide Recommendatory Letter to Contractor for Contractor to obtain Essentiality Certificate from DGH for availing Customs duty exemption. Any equipment, materials, or

supplies purchased by Contractor on account of Company shall thereafter become the property of Company upon payment by Company.

46.0 TRAINING REQUIREMENT OF PERSONNEL:

46.1 All the crew members including catering personnel should have undergone Personal Survival Training (PST), Fire Prevention & Fire Fighting (FPFF) Training/Basic Fire Fighting Training (BFF), Personnel Safety and Social responsibility (PSSR) and Elementary First Aid (EFA) from DGS approved agencies, and OPITO approved Helicopter Underwater Escape Training (HUET).

OR

All the crew members including catering personnel should have undergone OPITO approved BOSIET – Basic Offshore Safety Induction and Emergency Training (with EBS), which should cover at least PST, FPFF/BFF, PSSR, EFA, HUET.

No personnel shall be allowed to go on offshore rigs / marine vessels without undergoing the above training.

46.2 All the offshore going crew, should have IADC Rig pass certification or equivalent certification.

46.3 Additionally, they should have undergone training related to their work profile and for safety while working in areas with hazard of H2S presence.

47.0 LOG INTERPRETATION:

Since all log interpretations are based on inference from electrical or other measurements, Contractor cannot and does not guarantee the accuracy or correctness of any interpretation and Company agrees that Contractor shall not be liable or responsible except for the case of willful misconduct on Contractor or his sub-contractors part, for any loss, cost, damage or expense incurred or sustained by Company resulting directly or indirectly from any interpretation made by Contractor or any of its agents, servants, officers or employees. Should any such interpretation or recommendation be relied upon

as the sole basis for any drilling, completion, well treatment or production decision or any procedure involving any risk to the safety of any drilling ventures, drilling rig, or its crew or any other individual, Company agrees that under no circumstances shall Contractor be liable for any loss or damages on this account except in case of willful misconduct.

48.0 <u>REAL TIME DATA TRANSMISSION</u>:

Wireline Logging, Mudlogging, & MWD-LWD data to be transmitted in RealTime from Drilling Unit to Operator's onshore base, via latest version of industry standard WITS / WITSML data exchange format using Contractor provided V-SAT at Drilling Unit.

49.0 <u>BASE COORDINATOR</u>:

Contractor at its cost shall provide Base Coordinators for Cementing Services, Directional Drilling Services, Mud Engineering Services, Wireline Logging Services and Well Testing Services. The Base Coordinators will be primarily based in Kakinada or such other location in India as mutually agreed, be available for daily operational morning meetings (online/offline) and consultation at all times throughout the duration of the contract. Contractor will provide detailed resumes for the proposed coordinators and their alternates, which Contractor may wish to use in case the primary coordinator becomes unavailable.

50.0 <u>RISK PURCHASE</u>:

In the event of Contractor's failure to provide the services as per the Contractual scope, terms and conditions, Company reserves the right to hire the services from any other source at the Contractor's risk & cost and the difference in cost shall be borne by the Contractor. Further, OIL shall retain the right of forfeiture of Performance Bank Guarantee and any other action as deemed fit.

50.0 The following insurance provisions under General Conditions of Contract stand amended as mentioned hereunder for the particular services under this tender/contract

GCC Clause No.	Amended Clause

14.5	Waiver of subrogation: Except for the workmen's Compensation / Employer's Liability Insurance for workmen engaged under this contract which have been obtained by the contractor as their Corporate policy/rules, where OIL is neither required to be present as principal Assured or additional Assured, all insurance policies of the Contractor with respect to the operations conducted hereunder as set forth in clauses hereof, shall be endorsed by the underwriter in accordance with the following policy wording: "The insurers hereby waive their rights of subrogation against Oil India Limited or any of their employees or their affiliates and assignees to the extent of the indemnities undertaken by the Contractor under this contract".
14.9	If any of the above policy expire or/are cancelled during the term of this Contract and Contractor fails for any reason to renew such policies, OIL in no case shall be liable for any loss/damage occurred during the term when the policy is not effective. Furthermore, a penal interest @ 0.5% of the Total contract value shall be charged towards not fulfilling of the contractual obligations. Notwithstanding above, should there be a lapse in any insurance required to be taken by the Contractor for any reason whatsoever, loss/damage claims resulting therefrom shall be to the sole account of Contractor.

51.0 <u>LIABILITY FOR THE WELL OR RESERVOIR</u>:

Notwithstanding anything else contained herein to the contrary, the Company shall indemnify, and hold the Contractor and its Sub-contractors harmless for or in respect of:

(i) Any sub-surface damage (including but not limited to damages or loss of a well or reservoir or formation, the loss of any oil or gas there from), or any surface loss or damage or injury or death arising out of a sub-surface damage; and/or

(ii) Blowout, fire, explosion or any other uncontrolled well condition; and/or

(iii) Any injury or death whatsoever, direct or consequential, arising from or in any way connected with such sub-surface Operations or in performing or attempting to perform any such Operations.

(iv) Provided that such injury, death, loss, damage etc. as stated in (i) to (iii) above is not caused on account of willful misconduct or gross negligence of the Contractor or its personnel or any of its Sub-Contractor or its personnel.

52.0 NOTICES:

52.1 Any notice given by one party to other, pursuant to this Contract shall be sent by email and confirmed in writing to the applicable address specified below:

For Company

a) For contractual matters

Chief General Manager (C&P)
OIL INDIA LIMITED
Kakinada - 533004,
Andhra Pradesh, India
Email: kgbasin@oilindia.in

b) For technical matters

General Manager (Drilling Service)
OIL INDIA LIMITED
Kakinada - 533004,
Andhra Pradesh, India
Email: kgbasin@oilindia.in

For Contractor

52.2 A notice shall be effective when sent by email (email sent date) or on the notice's effective date whichever is later. Either party may change its address by giving Written Notice to the other party.

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BID EVALUATION CRITERIA (BEC)
(DRAFT)

1.0 VITAL CRITERIA FOR ACCEPTANCE OF BIDS:

The bid shall conform generally to the specifications and terms and conditions given in the Bid Document. Bidders are advised not to take any exception/deviation to the Bid Document. Exceptions/Deviations, if any, should be brought out during the Pre-Bid Conference as scheduled against this Tender. After processing such suggestions, Company may communicate the changes, if any, through an addendum to the tender document in this regard to the prospective bidders. Still, if any exceptions/deviations are maintained in the bid, such conditional/nonconforming bids may not be considered and rejected outright.

1.1 GENERAL CONFORMITY

Bids will be rejected if the equipment and services offered do not confirm the required parameters as stipulated in the technical specifications of this bidding document. Notwithstanding the general conformity of the bid to the stipulated specifications, the following requirements will have to be particularly met by the bidders without which the same will be considered as non-responsive and will not be considered for evaluation.

1.2 Scope of Work / Technical rejection criteria:

The following vital technical conditions should be strictly complied with failing, which the bid will be rejected:

Bids should be complete and cover the entire scope of work / supply and should conform to the technical specifications indicated in the bid documents. Incomplete and non-conforming bids will be rejected outright.

The Bidder shall be required to provide Bundled Services with capable and experienced service crew at the Rig / Base Personnel as per Contract Document, for Deep water Operations in Indian Offshore for DP-3 Drillship drilling unit(s) to be hired by the Company for exploratory drilling, testing and abandonment operations, in water depths from 500 meters to 3,000 meters and well depth up to minimum 9,000 meters (TVDSS). The Services shall be capable of operating in the above specified water depths.

The Bidder should provide all services listed under Group-I (Main Bundled Services) & Group-II (Additional Services) and should quote for both Group-I & II.

Bundled Services (Group-I):

1. Cementing Services: Cementing Equipment & Services including slurry design, supply of oil well cement, additives, floating & guiding equipment, casing accessories along with Base Engineer for deep-water wells.
2. Casing Accessories: Supply of floating & guiding equipment and casing accessories.
3. Casing and Tubing Running Services: Hiring of Casing & Tubing Running Services (CTRS), Torque Turn System (TTS) along with service personnel.

4. (a) Drilling Rental Tools: Hiring of Drilling tools inclusive of Tubular for Well Testing.
   (b) Hole openers, Under-reamers and MACB services: Hiring of Hole openers, Under-reamers and Multiple Activation Circulating Bypass Tool (MACB) services along with service personnel.
   (c) Well Bore Cleanout Services (WBCO): Hiring of Wellbore cleanout tools & Casing scraper along with service personnel.

5. Directional drilling Services: LWD/MWD, Mud Motor and Directional Drilling Services along with Crew for deep-water wells
6. Mud Engineering Services: Supply of mud chemicals along with Hiring of filtration unit & service personnel.
7. Drill Bits & Bi-Center Bits: Supply of Drill bits & Bi-Center Bits on consignment basis.
8. Liner Hanger Services: Supply of Conventional liner Hanger & Hiring of running tools along with service personnel.
9. Mud Logging Services: Hiring of Mud Logging Unit (MLU) along with Services and crew for deep-water wells.
10. Subsea wellhead services: Supply of Conductor pipes, Subsea wellhead & hiring of running tools along with service personnel.
11. Well Testing Services: Well Testing & TCP Services along with the crew for deep-water wells for carrying out production testing of exploratory wells.
12. Fishing and Milling Tools Rental services: Hiring of fishing tools such as Casing cut & pull spear system, Wash over pipe with accessories & Bridge Plug milling tools along with service personnel.
13. Wireline Logging & Perforation Services: Wireline Logging Services along with Crew for deep-water well.
14. Coring services: Coring, Core Handling & Core Stabilization Services.
15. Project Coordinator and Rig Site Coordinator
    i. Project Coordinator, primarily based in Kakinada.
    ii. Rig Site Coordinator based at the Drilling Unit.
    iii. Rig Site Logistics Coordinator based at the Drilling Unit.

Bundled Services (Group-II):

1. Shore Based Services: Hiring of facilities such as jetty, Bulk Handling Plant (B.H.P), Liquid Mud plant (L.M.P) along with material handling services as per Scope of Work.
2. Marine Vessels: Hiring of OSV/PSV as per scope of work for day-to-day supply to the rig.

A. TECHNICAL EVALUATION CRITERIA:

2.1 Eligibility and Experience of the Bidder

a. The bidder should be an Offshore Oilfield Services Provider and must have in-house capability to provide at least 3 out of the 5 services, namely (1) Cementing Services, (2) Directional Drilling Services, (3) Mud Engineering Services (4) Wire line Logging Services and (5) Well Testing Services. The bidder should have minimum experience for these services as indicated below:

1 Cementing Services:

1.1 The Bidder should have a minimum of five (05) years of experience in providing the Cementing services to Drilling/E&P Companies with at least three (03) years in offshore areas.

1.2 The Bidder should have executed at least one contract for providing Cementing services to Drilling/E&P Companies in at least 2 deep water Wells (WD ≥ 500 meters) in the last 07 years reckoned from original bid closing date.

1.3 Testing of Cement slurry design of all the slurry packages:
The Bidder should submit a laboratory test report for the slurry design (issued by ONGC, IDT-Dehradun or Bidder's own laboratory) of the formulations conforming to OIL's recommended parameters as per scope of work along with the technical bid. Bids not accompanied by a valid test report shall be rejected. Test report as above received after the opening date of tender will not be accepted. The test reports should clearly indicate the results against each testing parameter.

2 Directional Drilling Services:

2.1 The bidder should have a minimum of five (05) years of experience in providing Directional Drilling Services (LWD/MWD & Mud Motor) to Drilling/E&P Companies with at least three (03) years in offshore areas.

2.2 The Bidder should also have the experience in providing the Directional Drilling Services (LWD/MWD & Mud Motor) to at least 2 deep water Wells (water depth ≥ 500Mtr) and should have executed at least one contract for Directional Drilling Services (LWD/MWD & Mud Motor) in offshore area in the last 07 years reckoned from original bid closing date.

3 Mud Engineering Services:

3.1 The bidder should have a minimum of five (05) years of experience in providing the Mud Engineering Services to Drilling/E&P Companies with at least three (03) years in offshore areas.

3.2 The Bidder should also have executed at least one contract of Mud Engineering Services using proposed mud systems i.e. Water Base Mud System and SOBM Mud System in 2 Deep-water Wells (water depth ≥ 500Mtr) in the last 07 years reckoned from original bid closing date.

3.3 The Bidder should submit a laboratory test report (issued by ONGC, IDT-Dehradun or Bidder's own laboratory) of the formulations conforming to OIL's recommended parameters as per scope of work along with the technical bid. Bids not accompanied by a valid test report shall be rejected. Test report as above received after the opening date of tender will not be accepted.

4 Wire line Logging Services:

4.1 The Bidder should have a minimum of five (05) years of experience in providing Wire Line Logging services to Drilling/E&P Companies with at least three (03) years in offshore areas.

4.2 The Bidder should also have the experience in providing Wire Line Logging services to at least 2 deep water Wells (water depth ≥ 500Mtr) and should have executed at least one contract for Wire Line Logging services in offshore area in the last 07 years reckoned from original bid closing date.

5 Well Testing Services:

5.1 SSTT, SPT, NPU, CTU with pumping unit & CTLF and Slickline Services

(a) The bidder should have a minimum of five (05) years of experience in providing the SSTT, SPT, NPU, CTU with pumping unit & CTLF and Slickline Services to E&P companies/ Drilling companies including 3 years in offshore area and should have experience of at-least 02 deepwater offshore wells.

(b) Bidder should have executed at least one contract for the above services on a floater rig in the last 07 years to be reckoned from the Original Bid Closing Date.

5.2 TCP & DST Services

(a) The bidder should have a minimum of five (05) years of experience in providing the TCP & DST operation to E&P companies/Drilling companies including 3 years on floater rigs and should have experience of at-least 02 deepwater offshore wells.

(b) Bidder should have executed at least one contract for the above services on a floater rig in last 7 years to be reckoned from the Original Bid Closing Date.

b. Other Services in the Bundle (Group-I):

1. For all the other services mentioned in Group-I above, the bidder may either have their in-house capability or can have a pretender tie-up for those services only (Sub-contracting).

2. However, for other services, each individual service provider should meet the relevant experience criteria (as applicable) mentioned in the scope of work.

NOTE (For both a & b above): The bidder's experience in ongoing contract involving multiple services (with no interdependence) shall also be considered in meeting the experience mentioned above subject to condition that the relevant service has been satisfactorily completed.

c. Group-II (Shore Base and Marine Services):

The bidder (Offshore Oilfield Services Provider) may either have a pretender tie-up (Sub-contracting) or form a Consortium with Shore Based and Vessel Service providers. If a Consortium is formed, then the Bidder (Offshore Oilfield Services Provider) should be the leader of the Consortium. Refer to Clause 2.4, below, for Consortium sub-clauses.

2.2 Documentary Evidence:

In support of experience laid down under **BEC Clause No. A.2.1 (a);** the following documents must be submitted along with the unpriced Techno-commercial bid.

Copies of respective contracts (Relevant pages), along with documentary evidence in respect of satisfactory execution of each of those contracts, in the form of copies of any of the documents (indicating respective contract number and type of services), such as:

(i) Satisfactory completion / performance report (OR)
(ii) Proof of release of performance security after completion of the contract (OR)
(iii) Proof of settlement / release of final payment against the contract (OR)
(iv) Any other documentary evidence that can substantiate the satisfactory execution of each of the contracts cited above.

2.3 Eligibility & Experience criteria for Indian Joint Venture bidder:

In case the bidder is an Incorporated Indian Joint Venture Company, registered in India and incorporated under the Companies Act 1956 and any amendments there under, then the technical experience criteria laid down in BEC Clause No. A.2.1(a) above should be met as under:

(i) The Joint Venture Company by itself should meet the experience criteria

OR

(ii) The Joint Venture Partner (who can be either a Indian or a foreign company) having a stake of at least 26% in the Joint Venture Company should meet the technical experience criteria stipulated in the tender on its own and cannot rely on any other arrangement such as Consortium or Supporting company of the JV Partner or subsidiary / co-subsidiary / sister subsidiary / parent / holding / affiliating / associate company or through any other arrangement like technical collaborator for meeting the technical experience criteria. Documentary evidence in support of the above should be submitted along with the techno-commercial bid.

(iii) In case of (ii) above, an undertaking from the Joint Venture partner, based on whose experience the JV seeks qualification, shall be submitted with the techno-commercial bid stating they shall maintain minimum 26% shareholding in the JV till the execution of the contract.

(iv) Members of the JV are not allowed to quote separately / independently against this tender. All the bids received in such a case shall be summarily rejected. Further, all bids from parties with technical support from the same Principal shall be rejected.

(v) Constitution of Joint Venture: The members of the JV should not be more than three. If during evaluation of bid, a JV leader proposes any alterations / changes in the constitution or replacement or inclusion or expulsion of any partner(s) / member(s) of the Joint Venture which had originally submitted the bid, to drive some advantages / benefits based on any development(s) having come to his knowledge at any time, the bid of such a JV shall be liable for rejection. Similarly, under such a situation the contract shall be liable for termination, if already awarded.

(vi) Indian companies / Joint Venture companies (Incorporated JV): Indian bidders whose proposal for Joint Venture involves foreign equity participation or payment of royalty and / or lump sum for technical know-how and wherever Govt. approval is necessary, are required to submit their application submitted to SIA/RBI along with the bid and copy of Govt. approval prior to the date of price bid opening. Confirmation to this effect and declaration on the same to be provided as part of their technical offer.

2.4 Bids from Consortium:

In view of the complexity of the nature of work involved as covered by the Bidding Documents, it is anticipated that some of the intending bidders may pool their resources and experiences to form Consortia. However, consortium can only be

formed with sister subsidiary / co-subsidiary companies having the same parent / holding company or within the same ultimate parent / holding company.

2.4.1 The leader of the consortium should themselves meet the minimum experience requirement as per BEC Clause A.2.1(a) above. For proof of requisite experience against BEC clause A.2.1(a), the leader of the consortium shall submit relevant documents in line with BEC clause A.2.2 above.

2.4.2 The leader of the Consortium must submit bid on behalf of the consortium of Bidders. A Memorandum of Understanding (MOU) between the Consortium members duly executed by the CEO/Authorized person and certified by the competent authority of the respective organization of the consortium members and notarized, must accompany the bid which should clearly define the role/scope of work of each partner/member and should clearly define the leader of the consortium. Memorandum of Understanding (MOU) must also state that all the members of the consortium shall be jointly and severally responsible for discharging all obligations under the Contract. However, the Leader of the Consortium must submit an undertaking along with the technical bid towards unconditional acceptance of full responsibility for executing the "Scope of Work" of this bid document. In case of award, such MOU shall be kept valid throughout the entire contract period, including extensions, if any.

2.4.3 Only the Leader of the Consortium should register in the e-tender portal and submit bid on behalf of the Consortium. The other members of the Consortium shall ratify all the acts and decisions of the Leader of the Consortium, which are taken in connection with and/or during the evaluation of the tender and execution of the contract.

2.4.4 The Bid Security shall be in the name of the Leader of the consortium on behalf of the consortium with specific reference to the consortium bid and name & address of consortium members. Similarly, the Performance Security shall be in the name of the Leader on behalf of the Consortium.

2.4.5 The leader of the Consortium on behalf of the Consortium shall coordinate with OIL during the period the bid is under evaluation, as well as during the execution of works, in the event contract is awarded and he shall also be responsible for resolving the dispute/ misunderstanding/ undefined activities, if any, amongst all the Consortium members.

2.4.6 Any correspondence exchanged with the leader of the consortium shall be binding on all the consortium members.

2.4.7 Payment shall be made by OIL only to the leader of the consortium towards the fulfilment of contract obligations.

2.4.8 In the case of Consortium bids, the bid shall be digitally signed by the leader of the Consortium. The Power of Attorney from each member authorizing the leader for signing and submission of Bid on behalf of the individual member must accompany the Bid offer.

2.4.9 Documents/details pertaining to the qualification of the bidder must be furnished by each partner/ member of the consortium complete in all respects along with the bid clearly bringing up their experience especially in the form of work in their scope.

2.4.10 **CONSTITUTION OF CONSORTIUM:** If during the evaluation of the bid, a consortium leader proposes any alterations/changes in the constitution or replacement or inclusion or expulsion of any partner(s)/ member(s) of the consortium which had originally submitted the bid, to drive some advantages/benefits based on any development(s) having come to his knowledge at any time, the bid of such a consortium shall be liable for rejection.

2.4.11 **SIGNING OF CONTRACT:** In the event of the award of the contract to the consortium, the contract is to be signed by all the members of the consortium and the liability of each one of them shall be jointly and severally.

2.4.12 Members of the consortium are not allowed to quote separately/independently against this tender. All the bids received in such cases will be summarily rejected. Further, all bids from parties with technical support from the same Principal shall be rejected.

2.4.13 Certified copies (attested by Director/Company Secretary) of Board resolutions passed by the respective Board of Directors of the companies (Consortium leader and members) agreeing to entering into such consortium with each other for submission of bid for the NIT and authorizing designated executives of each company to sign in the MOU to be provided along with the technical bid.

2.4.14 The MOU/Agreement should be legally valid i.e. it should be on a non-judicial stamp paper and notarized. In case of involvement of an overseas bidder/consortium partner, the MOU/Agreement should be duly attested by Indian Embassy where MOU is signed / Notarized by the Notary where MOU is signed.

2.5 **Bids submitted on the basis of technical experience of the parent / subsidiary company:**

Offers of those Primary bidders who themselves do not meet the experience criteria as stipulated in BEC Clause No. A.2.1 (a) can also be considered provided the bidder is a wholly owned subsidiary company of the parent company [supporting company] or parent company can also be considered on the strength of its wholly owned subsidiary [supporting company]. However, the parent / subsidiary company of the bidder should on its own meet the experience as stipulated under BEC Clause A.2.1 (a) above and should not rely for meeting the experience criteria on its sister subsidiary/co-subsidiary company or through any other arrangement like Technical Collaboration agreement for meeting the experience criteria.

In case of Primary bidder who is a subsidiary company dependent upon the experience of the parent company or vice-versa, with a view to ensure commitment and involvement of the parent / subsidiary company (Supporting Company) for successful execution of the contract, the participating bidder should enclose the following with the techno-commercial bid:

1. An Agreement (as per format enclosed as Annexure-I) between the (bidder and supporting company)
2. Guarantee (as per format enclosed as Annexure-II) from the parent / subsidiary company (supporting company) to OIL INDIA LIMITED for fulfilling the obligation under the Agreement.

3. Undertaking from the supporting company to the effect that in addition to invoking the performance security submitted by the contractor, the performance security provided by supporting company shall also be invoked by OIL due to non-performance of the contractor.

2.6 Bids submitted on the basis of technical experience of sister subsidiary / co-subsidiary company:

Offers of those primary bidders who themselves do not meet the experience criteria as stipulated in BEC Clause No A.2.1(a) can also be considered based on the experience criteria of their sister-subsidiary / co-subsidiary company within the ultimate parent / holding company subject to meeting of the following conditions:

1. Provided that the sister-subsidiary / co-subsidiary company and the bidding company are both wholly owned subsidiaries of an ultimate parent / holding company either directly or through intermediate wholly owned subsidiaries of the ultimate parent / holding company or through any other wholly owned subsidiary company within the ultimate / holding parent company. Documentary evidence to this effect to be submitted by the ultimate parent / holding company along with the technical bid.

2. Provided that the sister subsidiary / co-subsidiary company on its own meets the experience criteria stipulated in the BEC Clause No.A.2.1(a) and not through any other arrangement like Technical Collaboration Agreement.

3. Provided that with a view to ensure commitment and involvement of the sister subsidiary / co-subsidiary company for successful execution of the contract, the participating bidder submits an Agreement, as per format furnished vide Annexure-III, between their Sister Subsidiary / Co-Subsidiary Company and the Ultimate Parent / Holding Company of both the bidder and the Sister Subsidiary / Co-Subsidiary, along with the technical bid.

4. **Note:** In case of Clauses 2.5 & 2.6 above, bidders shall submit the following additional documents:

a) Undertaking by the subsidiary / parent company to provide a Performance Security (as per format and instructions enclosed vide PROFORMA-Q), equivalent to 50% of the value of the Performance Security to be submitted by the bidding company in case the bidding company is the successful bidder.
Note to (a): In case subsidiary / parent company fails to submit Performance Bank Guarantee as per (a) above, Bid Security submitted by the bidder shall be forfeited.

b) In cases where subsidiary/parent companies do not have Permanent Establishment in India, the bidding company can furnish Performance Security which is sum of Performance Security amount to be submitted by the bidder and additional 50% Performance Security to be submitted by the subsidiary / parent / sister company. In such case bidding company shall furnish an undertaking that their subsidiary / parent / sister company is not having any Permanent Establishment in India in terms of Income Tax Act of India

c) Undertaking from the subsidiary / parent company to the effect that in addition to invoking the performance security submitted by the contractor, the performance

security provided by them shall also be invoked by OIL INDIA LIMITED due to non-performance of the contractor.

3.0 **Wherever the pretender tie-up (sub-contracting) is envisaged [as per BEC clause A.2.1(b)], the Bidders should:**

(i) Submit MOU/ Agreement with their sub-contractor(s) clearly indicating their roles under the scope of work.

(ii) MOU/Agreement concluded by the bidder with their sub-contractor(s) should be addressed to OIL clearly stating that the MOU/Agreement is applicable to this tender and shall remain valid and binding on them for the contract period, including extensions if any. Notwithstanding the MOU/Agreement, the responsibility of completion of job under this contract will be of the bidder.

4.0 **Service crew:**

(i) The bidder should confirm deploying the minimum number and the category of the crew personnel as indicated in the bid document. These personnel shall be included in the `List of Crew Personnel' in the Contract for the purpose of deployment and, for reduction of day rates due to short deployment.

(ii) The experience of the personnel deployed under this contract shall be as per requirements stipulated in individual scope of work of various services.

(iii) Training to the Crew personnel: All the crew members should have undergone Personal Survival Training (PST), Fire Prevention & Fire Fighting (FPFF) Training/Basic Fire Fighting Training (BFF), Personnel Safety and Social responsibility (PSSR) and Elementary First Aid (EFA) from DGS approved agencies, and OPITO approved Helicopter Underwater Escape Training (HUET).

OR

All the crew members should have undergone **OPITO** approved **BOSIET** – Basic Offshore Safety Induction and Emergency Training (**with EBS**), which should cover at least **PST, FPFF/BFF, PSSR, EFA, HUET.**

(iv) No personnel are allowed to go on offshore rigs/marine vessels without undergoing the above training.

(v) Confirmation in regard to Para 4(ii) and 4(iii) above is to be submitted along with the unpriced bid. However, the details of all personnel, i.e. experience data, proof of qualification etc., shall be submitted within 30 days of issue of Mobilization Notice for approval by OIL before commencement of the work.

5.0 **Inspection Clause:**

OIL shall get the equipment of various services inspected on its own or through any of the following internationally reputed Third-Party Inspection Agencies as per tender specifications. OIL, at its option, can nominate any of the following Third-Party Inspection Agency for inspection of various services and the cost of the third-party inspection will be borne by OIL.

(a) LRDISI
(b) ABS
(c) Oilfield Audit Services Inc.
(d) DNV GL
(e) OMCI
(f) Any other Agency nominated by the Company.

Bidder to confirm compliance (Refer to Inspection Clause 8.0 of SCC under Section – III for details).

6.0 **Mobilization Period:**

Bidders are required to confirm that; they shall mobilize and deploy the Services along with the crew so as to commence operations at the designated offered location within the period as mentioned below from the date of issuance of the Mobilization Notice by Company. Bids with mobilization times quoting more than the period mentioned below will be outrightly rejected.

Particulars	Mobilization Time
Group – I Services (Exclusive of Supply of Subsea well heads & Conductor pipes, Well testing & TCP Services, Tubulars for Well Testing and Liner Hanger Equipment & Liner Running Services)	Within 90 days of Mobilization notice issued by Company
Group – I Services (Tubular for Well Testing)	Within 120 days of Mobilization notice issued by Company
Subsea well heads with Services and Conductor pipes under Group – I Services	Within 210 days of Mobilization notice issued by Company
Liner Hanger Equipment & Liner Running Services under Group – I Services	Within 150 days of Mobilization notice issued by the Company
Well Testing & TCP Services under Group – I Services	Within 120 days of Mobilization notice issued by the Company
Group - II Services (Shore Based Services)	Within 150 days of Mobilization notice issued by the Company
Group - II Services (OSV/PSV)	Within 150 days of Mobilization notice issued by the Company
Project Coordinator, Rig Site Coordinator and Rig Site Logistics Coordinator	Within 30 days of Mobilization notice issued by Company
Interim De-mobilization and Re-mobilization	
Liner Hanger Equipment & Liner Running Services under Group – I Services	Within 45 days of Re-Mobilization notice issued by the Company
9-5/8" / 9-1/2" SDMM, Basic MWD tool and MWD collars with 7-5/8" Reg connections under Group – 1 Services.	Within 45 days of Re-Mobilization notice issued by the Company

Well testing Services & TCP Services under Group – I Services	Within 45 days of Re-Mobilization notice issued by the Company
Coring, Core Handling & Core Stabilization equipment & services under Group – I Services	Within 45 days of Re-Mobilization notice issued by the Company
Brine Filtration Unit & Services under Group-I Services	Within 45 days of Re-Mobilization notice issued by the Company

Note:

1) Separate Mobilization notice will be issued for each of the mobilization timelines as mentioned above.
2) Separate Interim De-mobilization and Re-mobilization notice will be issued for Liner Hanger Running Services, Well testing Services, 9-5/8" / 9-1/2" Directional Drilling services and Coring services.
3) The succeeding day of the issue of the Mobilization / Re-mobilization Notice shall be counted as Day 1 for the purposes of the Mobilization / Re-mobilization period.
4) Supply of all Consumables shall be in staggered manner as per OIL's well requirements.

7.0 **HSE Criteria:**

7.1 The Bidder should have a valid HSE Management System (HSEMS) for each quoted Services certified as per **ISO: 9001, ISO: 14001 & OSHAS: 18001 /ISO: 45001/ISRS** on the date of the original bid opening date and should submit an undertaking that the certificate(s) shall be kept valid during execution of contract period. The documentary proof in the form of valid certificates should be provided along with the techno-commercial bid.

7.2 In case certified HSE management system is not available then the bidder must give an undertaking that he shall have the same in place during the period of mobilization so that specific certified HSE management system for each quoted Services is in place before the commencement of operations.

7.3 In case certified HSE management system for each quoted Services certified as per **ISO: 9001, ISO: 14001 & OSHAS: 18001 /ISO: 45001/ISRS** is not available, the bidder to submit details of their HSE management system approved by its highest authority not lesser than a director.

8.0 **Vintage:** Vintage clauses for individual services shall be as follows.

Service Details	Vintage Clause
Cementing Service	- Batch mixture and Cementing Equipment shall not be more than 10 (Ten) years old as on the original bid closing date. - Bidder to submit relevant documents in support of this vintage clause.

Mud Engineering Service	- Lab equipment as applicable shall not be more than 10 (Ten) years old as on the original bid closing date.
Directional Drilling Service	- Downhole Tools should either be new or recently refurbished. In case of refurbished tools, the refurbishment should not be more than 06(six) months old as on the original bid closing date.
Wire line Logging service	- All downhole tools including surface logging unit must be provided as per requirements mentioned in Scope of Work for Wireline Logging & Perforation services.
Mud Logging Unit service	- The Mud Logging Unit should not be more than 10 (ten) years old and must be latest ISO/DNV certified as on the original bid closing date. - Bidder to submit relevant documents in support of this vintage clause.
Coring Services	- Coring Equipment should either be new or recently refurbished. In case of refurbished tools, the refurbishment should not be more than 06 (six) months old as on the original bid closing date.
Well Testing service	- The Residual life of the equipment for SSTT, SPT, NPU, CTU with pumping unit & CTLF and Slickline should be more than 5 (Five) years and shall be valid during the execution of contract duration. - Bidder to submit relevant documents in support of this clause.
Marine Vessels	- The vintage of the Marine Vessels offered shall not be more than 20 years old from the date of manufacturing as on the original Bid closing date. - Bidder to submit relevant documents in support of this vintage clause.

9.0 Details of experience and past performance of the bidder and incorporated joint venture partner (in case of a joint venture), on works/ jobs done of similar nature in the past and details of current work in hand and other contractual commitments, indicating areas and clients are to be submitted along with the techno-commercial bid, in support of the experience laid down under BEC clause no. A.2.1(a) above.

10.0 A job executed by a bidder for its own organization / subsidiary will not be considered as experience for the purpose of meeting BEC.

11.0 Quality Management System (QMS) Criteria

a) Bidder shall have a valid Quality Management System (QMS) certification as per API Spec Q1 or equivalent standard, which shall be valid as on the original bid closing date. Documentary evidence in support of the same shall be submitted along with the techno-commercial bid.

b) In addition to (a) above, the Bidder should preferably have a valid certification as per API Spec Q2 for oilfield service operations. The certification, if available, shall be valid as

on the original bid closing date and a copy of the same shall be submitted along with the bid.

c) In case the Bidder does not possess API Spec Q2 certification, the Bidder shall submit documentary evidence demonstrating implementation of an equivalent Service Quality Management System covering, but not limited to, the following aspects:

- Risk Assessment and Mitigation Procedures
- Contingency Planning for Critical Operations
- Competency and Training of Personnel
- Service Execution and Performance Monitoring
- Non-Conformance Reporting and Corrective Actions

B. FINANCIAL EVALUATION CRITERIA:

1. Annual Financial Turnover from operation of the bidder during any of preceding 03 (Three) financial/accounting years from the original bid closing date should be at **least…….. or USD ……. Million.**

2. Net Worth of the bidder must be positive for the financial / accounting year preceding the original bid closing date.

Note:

i. **Annual Financial Turnover of the bidder from operations shall mean:** "Aggregate value of the realization of amount made from the sale, supply or distribution of goods or on account of services rendered, or both, by the company (bidder) during a financial year" as per the Companies Act, 2013 Section 2 (91).

ii. **Net worth shall mean:** "Share capital + Reserves created out of profits and securities Premium – Aggregate value of accumulated losses (excluding revaluation reserves) – deferred expenditure – Miscellaneous Expenditure to the extent not written off and carried forward Loss - Reserves created out of write back of depreciation and amalgamation."

3. If the Bidder is an Incorporated Joint Venture (JV) Company and does not meet Financial Criteria (BEC Clause Nos. B.1 & B.2 above) by itself, it can submit the bid based on the financial strength of its JV member having more than 26% stake in the JV Company and the following need to be complied/submitted:

i) Annual Financial Turnover from the operation of the member having more than 26% stake in the JV during any of the preceding 03 (Three) financial / accounting years from the original bid closing date shall be as per BEC Clause B.1 above.

ii) Net worth of the members having more than 26% stake in the JV (supporting company) should be positive for the financial/accounting year preceding the original bid closing date as per BEC Clause B.2 above.

iii) Corporate Guarantee (Annexure-IV) on the letter head of the member having more than 26% stake in the JV signed by an authorized official undertaking that they would financially support their subsidiary company for executing the project / job in case the same is awarded to them.

iv) An undertaking from the Joint Venture partner, based on whose experience the JV seeks financial qualification, shall be submitted with the techno commercial bid stating that they shall maintain minimum 26% shareholding in the JV till execution of the contract is accomplished.

v) A certificate from the Statutory Auditor of the JV company on the shareholding pattern of the JV.

4. In case the bidder is a subsidiary company (should be a wholly owned subsidiary of the parent / ultimate parent / holding company), who does not meet financial criteria by itself and submits bid based on the financial strength of its parent / ultimate parent / holding company, then documents need to be submitted along with the technical bid in support of the following:

i. Annual Turnover from operation of last three accounting years of the parent / ultimate parent / holding company (supporting company) shall be as per BEC Clause B.1 above.

ii. Net worth of the parent / ultimate parent / holding company (supporting company) shall be positive for the financial/accounting year preceding the original bid closing date as per BEC Clause B.2 above.

iii. Corporate Guarantee (Annexure-V) on parent / ultimate parent / holding company's (supporting company) letter head signed by an authorized official undertaking that they would financially support their subsidiary company for executing the project / job in case the same is awarded to them.

iv. A certificate from the statutory Auditor of the bidding company as well as of the parent / ultimate / holding parent company (supporting company) to establish the relationship and equity percentage holding between bidding company and the supporting company. The certificates should be duly certified by the Company Secretary or one of the Directors of the company concerned.

Note: The above certificate should not be more than 30 days old as on the original bid closing date.

4.1 In case the Bidder is a Consortium, then any one of the Consortium members individually shall have to meet the financial turn-over criteria as per BEC Clause B.1 above. Similarly, other Consortium members individually shall have minimum Annual financial turnover of **INR …… Cr. or USD …… Million** in any of preceding 03 (Three) financial / accounting years from the original bid closing date. Net worth of all Consortium members must be Positive for the preceding financial / accounting year from the original bid closing date as per BEC Clause B.2 above.

5. **Notes to BEC Clause B1 & B2 above:**

a. For proof of Annual Turnover from operation, Net worth & Working Capital, any one of the following documents / photocopies must be submitted along with the bid:

(i) Audited Balance Sheet along with Profit & Loss account.

OR

(ii) A certificate issued by a practicing Chartered / Cost Accountant (with Membership Number and Firm Registration Number), as per format prescribed in PROFORMA-H.

Note:

i. Mention of UDIN (Unique Document Identification Number) is mandatory for all Certificates issued w.e.f. February 1, 2019, by Chartered Accountant in Practice.

ii. In case the Audited Balance sheet and Profit Loss Account submitted along with the bid are in currencies other than INR, the bidder shall have to convert the figures in equivalent INR considering the prevailing conversion rate on the date on which the Audited Balance Sheet and Profit & Loss Account is signed. A CA Certificate is to be submitted by the bidder regarding converted figures in equivalent INR. Else, the Audited Balance Sheet and Profit & Loss Account shall be evaluated by considering the BC selling rate declared by State Bank of India (on the date on which the Audited Balance Sheet and Profit & Loss Account is signed) for conversion to INR.

b. Considering the time required for preparation of Financial Statements, if the last date of preceding financial / accounting year falls within the preceding six months / within the due date for furnishing of audit report as per Section 139(1) of IT Act, 1961 (read along with latest circulars / notifications issued by CBDT from time to time) reckoned from the original bid closing date and the Financial Statements of the preceding financial / accounting year are not available with the bidder, then the financial turnover of the previous three financial / accounting years excluding the preceding financial / accounting year will be considered. In such cases, the Net worth of the previous financial / accounting year excluding the preceding financial / accounting year will be considered. However, the bidder has to submit an undertaking in support of the same along with their technical bid as per **PROFORMA-L.**

c. Bid will be liable for rejection if not accompanied with adequate documentary proof in support of Annual turnover & Net worth as mentioned above in **Para B1 & B2.**

C. **COMMERCIAL EVALUATION CRITERIA:**

1.0 Bids shall be submitted under Single-Stage Two-Bid System i.e. Technical Bid and Priced Bid separately in the OIL's e-Tender portal. The Technical Bid is to be uploaded as per Scope of Work & Technical Specification of the tender in "Technical RFx Response" Tab and Priced Bid as per Proforma-B and Proforma-B1 uploaded in the "Notes & Attachments" Tab. Bids shall be rejected outright if the prices are indicated in the technical bids. Bids not conforming to this two-bid system shall be rejected outright.

2.0 Bidder shall offer firm prices. Price quoted by the successful bidder must remain firm during the execution of the Contract and not subject to variation on any account.

3.0 Bids with shorter validity (i.e., less than 120 days from the scheduled bid closing date) will be rejected as being non-responsive.

4.0 Bid Security in Original shall be furnished as a part of the Technical Bid and shall reach OIL's office at Kakinada (KG Project Office) before bid closing date & time. A scanned copy of the bid security shall however be uploaded in OIL's e-procurement portal along with the Technical Bid. The amount of Bid Security shall be as specified in the Forwarding Letter of the Bid Document. Bid without proper & valid Bid Security shall be rejected.

5.0 The Integrity Pact vide **PROFORMA-J** must be uploaded in OIL's E-Procurement portal along with the Technical Bid digitally signed by the same signatory who digitally signed the Bid i.e. who is duly authorized to sign the Bid. If any bidder refuses to sign Integrity Pact or declines to submit the Integrity Pact, their bid will be rejected.

6.0 Bids submitted after the Bid Closing Date and Time will be rejected.

7.0 Bids received through the e-procurement portal shall only be accepted. Bids received in any other form shall not be accepted.

8.0 Bid documents are non-transferable. Bid can only be submitted in the name of the bidder in whose name the User ID and Password have been issued. Unsolicited bids will not be considered and will be straightway rejected.

9.0 Bids shall be typed or written in indelible ink and shall be digitally signed by the bidder or his authorized representative.

10.0 Any physical documents wherever called for, submitted by bidders shall contain no interlineations, white fluid erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such correction shall be initialed by the person or persons who has/have digitally signed the Bid.

11.0 Any Bid containing false statement will be rejected.

12.0 Bidders shall quote directly and not through their Agent / Representative / Retainer / Associate in India.

13.0 Bidders must quote clearly and strictly in accordance with the price schedule outlined in "Price Bid Format" of Bid Document; otherwise, the Bid will be summarily rejected.

14.0 Bidder must accept and comply with the following clauses as given in the Bid Document in toto failing which bid will be rejected:

(i) Bid Security Clause
(ii) Performance Guarantee Clause
(iii) Force Majeure Clause
(iv) Tax Liabilities Clause
(v) Arbitration Clause
(vi) Acceptance of Jurisdiction and Applicable Law
(vii) Liquidated damage and penalty clause
(viii) Safety & Labour Law
(ix) Termination Clause
(x) Integrity Pact

15.0 The Bids and all uploaded documents must be digitally signed using "Class 3" digital certificate [e-commerce application (Certificate with personal verification and Organization name)] as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India [except copies of the documents required in physical form] should invariably be submitted in the 'Technical Attachment Tab' through OIL's e-bidding portal, before the scheduled date and time for the tender closing. All the documents uploaded shall be digitally signed by the authorized signatory of the bidder. However, the original bid security should necessarily be submitted in physical form, in a sealed envelope.

16.0 The bidder shall submit an undertaking/declaration as per Appendix-1 & 2 confirming that they have read and understood OIL's Banning Policy and that, neither they nor any of their allied concerns or partners or associates or directors, or proprietors involved in any

capacity, are currently on OIL's Holiday/Banning List. Further, the bidder shall confirm that neither they nor any of their aforementioned entities have, during the last three years, been involved in any transgression with any company conforming to the Transparency International (TI) approach or with any Public Sector Enterprise of India that could justify exclusion from the tender process. The bidder shall also disclose details of all such allied entities, if any, as required under the Banning Policy.

D. PRICE EVALUATION CRITERIA:

The parties whose bids conform to the technical specifications, terms and conditions stipulated in the bidding document and are considered to be responsive after subjecting to Bid Evaluation Criteria mentioned above will be considered for further evaluation as per the Price Evaluation Criteria given below:

1.0 This tender calls for hiring of Bundled Services for Two (2) Drillships in a staggered manner. First Drillship and associated bundled services shall be tentatively deployed by June 2027 and the Second Drillship and associated bundled services shall be deployed tentatively by April 2028. The number of wells expected to be serviced are 4 (four) for first Drillship and 4 (four) for second Drillship.

1.1 Duration of Bundled Services under the proposed Contract shall be for 3 years from the date of Commencement of the Contract with provision, at the sole option of Company, for extension up to one (1) more year at same rates, terms and conditions subject to Clause 2.5 of Special Terms & Conditions (SCC) of the Contract.

1.2 The concurrent operations for providing Bundled Services at two Drillships are envisaged for a period of 18 months during the 3 years tenure of the Contract. At second Drillship, Contractor will be required to deploy certain additional regular Bundled Services as detailed in the Scope of Work. However, Specialized/ Call out/ Contingency/ Optional Services along with its equipment and manpower shall be shared between the two Drillships for the sake of operational efficiency.

1.3 The extent of Bundled Services to be provided by Contractor has been divided into two parts. In the first part, the full service requirement is worked out considering 6 wells in 3 years duration and its Price Schedule Format is provided in Performa-B. In the second part which primarily covers concurrent operations for 18 months, the requirement of additional regular services is estimated for 2 wells and its Price Schedule Format is provided in Performa-B1. However, for Well Test services, the combined requirement for 8 wells is listed in Proforma-B itself.

2.0 The bidders must quote their charges / rates in the manner as called for vide "Schedule of Rates" under Section-IV and the summarized price schedule formats vide enclosed Proforma-B and Proforma-B1.

3.0 In the event of computational error between unit price and total price, the quoted unit price shall prevail. Similarly, in the event of discrepancy between rates quoted in words and figures, the unit rates quoted in words will prevail.

4.0 Priced Bids shall be evaluated taking into account the Price quoted as per Proforma-B and Proforma-B1 including quoted GST.

5.0 Quoted price must include all liabilities and taxes including statutory liabilities but excluding GST, which shall be quoted separately in the Price Bid format.

6.0 The quantities shown against each item in the "Price Bid Format (i.e. in Proforma-B and Prforma-B1)" shall be considered for the purpose of Bid Evaluation. It is, however, to be clearly understood that the assumptions made in respect of the number of months / number of days / parameters for various operations are only for the purpose of evaluation of the bid and the Contractor will be paid on the basis of the actual number of months / number of days / parameters, as the case may be.

6.1 The Bidder shall quote identical unit rates/prices for all corresponding items of equipment, consumables, manpower, etc., as listed in Proforma-B and Proforma-B1. In case of any discrepancy or mismatch in the quoted unit rates/prices for any item between the two proformas, the lower of the two rates shall be considered for evaluation purposes.

In such cases, the Contract (if awarded) shall be based on the lower unit rate/price, and the corresponding total amounts shall be adjusted accordingly. This shall be binding on the Bidder.

Any deviation from the requirement of quoting identical unit rates/prices, or non-acceptance of the above condition, shall lead to rejection of bid.

7.0 **Priced Bid Evaluation:**

Price Evaluation of all the technically qualified bids will be done on the basis of rates quoted by the bidder as per Proforma-B and Proforma-B1. However, bidders must comply with the limits indicated against each of the following rates:

The bidder's price shall be worked out as per rates quoted for following services:

1. Cementing Services (1)
2. Casing Accessories (2)
3. Casing and Tubing Running Services (3)
4. Drilling Tools Rental, Hole Openers, Under Reamers, MACB & WBCO Services (4)
5. Directional Drilling Services (5)
6. Mud Engineering Services (6)
7. Drilling Bits & Bi-center bits supply on Consignment Basis (7)
8. Liner Hanger Services (8)
9. Mud Logging Services (9)
10. Subsea Well Heads and Conductor Pipe supply and services (10)
11. Well Testing Services (11)
12. Fishing and Milling Tools Rental Services (12)
13. Wireline Logging & Perforation Services (13)
14. Coring Services (14)
15. Shore base Services (15)
16. Marine Vessels (16)
17. Project Coordinator and Rig Site Coordinators (17)

TOTAL ESTIMATED CONTRACT COST FOR THE BUNDLE SERVICE AND MANPOWER ETC. FOR DRILLING AND TESTING OF WELLS INCLUDING ALL TAXES & DUTIES INCLUDING GST AND ALL OTHER TAXES AND DUTIES (EXCEPTING BASIC CUSTOMS DUTY ON ELIGIBLE IMPORTED ITEMS), T = T1 + T2 where,

T1, Total Estimated Contract Value for Rig 1 for a period of Three (3) Years,

Cost Summary of 17 Services under Proforma-B and

T2 , Total Estimated Contract Value of additional Services for Rig 2=
Cost summary of 13 services under Proforma-B1

NOTES:

(a) The items (1), (2), (3), (4), (5), (6), (7), (8), (9), (10), (11), (12), (13), (14), (15), (16) and (17) are as defined in Schedule of Rates.

(b) Bid evaluation will be carried out based on the sum of the total price quoted including GST. However, payment will be made against the actual job done.

(c) Mobilization of the Bundle Service package will be to the designated locations as detailed under Clause 2.3 of SCC under Section – III.

(d) Force Majeure Rate and Suspension Rate shall not be considered for bid evaluation.

7.1 To ascertain the inter-se-ranking, Price Bids shall be evaluated on overall lowest cost to OIL (L-1 offer) basis i.e. considering total quoted price for all services including applicable GST (CGST & SGST/UTGST or IGST). Price Bid uploaded without giving any of the details of the taxes (Including rates and amounts) shall be considered as inclusive of all taxes including GST. When a bidder mentions taxes as extra without specifying the rates & amount, the offer shall be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/Contracts shall be binding on the bidder. Input Tax Credit on GST (Goods & Service Tax) for this service is NOT available to OIL & the bids shall be evaluated based on total price including GST.

7.2 Bidders are required to ascertain themselves, the prevailing rates of GST and all other taxes and duties as applicable (along with rates of all related levies viz. Surcharges, Cess, etc.,) on the scheduled date of submission of Price Bids/ revised Price Bids (if any) and COMPANY would not undertake any responsibility whatsoever in this regard.

7.3 Accordingly, bidders should quote the prices, clearly indicating the applicable rate of GST / description of service as per GST rules (under which the respective service is covered) along with all other taxes and duties applicable. Details of abatements / deductions available, if any, should also be indicated specifically.

7.4 In the contracts involving multiple services or involving supply of certain goods / materials along with the services, Bidder should give separate break-up for cost of goods and cost of various services and accordingly quote GST as applicable for the taxable services. In case the Bidder does not give break-up of the quoted prices, separately indicating the components of taxable services and material to be supplied (if any), the GST will be loaded on entire quoted / contract value for evaluation considering abatement, if an, as per statute.

7.5 GST, if any applicable, input services required to meet the scope of work will be borne by the Bidder within their quoted prices. The Bidder must avail eligible GST credit of tax/ duty paid on input services / capital goods / Inputs and benefit of GST credit should be passed on to COMPANY by way of quoting rate(s) net of GST credit i.e. gross value of service adjusted by GST credit available to the bidder.

7.6 Total Mobilization charges quoted by the bidder shall not exceed 5% of the total quoted value. However, mobilization charges if quoted in excess of 5% of the total quoted value, the excess amount shall be paid at the end of the contract.

7.7 Total Demobilization charges quoted by the bidder shall not be less than 0.5% of the total quoted value. If De-mobilization is quoted in deficit or less than 0.5% of the total quoted value, the deficit amount shall be withheld from the first invoice and the same will be paid at the end of the contract along with Demobilization charges.

7.8 Quoted Individual Service Day Rates (ISDR) of all the items shall not exceed 75% of the quoted corresponding Operating Component Day Rates (OCDR)/Operating Day Rates (ODR) of all the same items (wherever applicable as per Schedule of Rates). If the quoted Individual Service Day Rates (ISDR) of each of the individual items is/are found more than 75% of the corresponding Operating Component Day Rates (OCDR)/Operating Day Rates (ODR) quoted in the price bid, then evaluation will be done based on the price(s)/rate(s) quoted by the bidder in the price bid. However, in the event of award of contract and payment, Individual Service Day Rates (ISDR) of each of the individual items, whichever is/are quoted more than 75% of the corresponding Operating Component Day Rates (OCDR)/Operating Day Rates (ODR), will be paid @75% of the corresponding Operating Component Day Rates (OCDR)/Operating Day Rates (ODR). This shall be binding to the bidders and any deviation to the same shall lead to rejection of bid(s).

7.9 Suspension Rate (SR) of the Bundle Service Package shall be 75% of the respective Individual Service Day Rate. (This rate will not be considered for price evaluation).

7.10 Force Majeure Day Rate of the Bundle Service Package shall be 75% of the Individual respective Service Day Rate. (This rate will not be considered for price evaluation).

7.11 OIL will prefer to deal with registered bidder under GST. Therefore, bidders are requested to get themselves registered under GST, if not registered yet. However, if any unregistered bidder is submitting their bid, their prices will be loaded with applicable GST while evaluation of bid.

8.0 CONSIDERATION OF INDIAN AGENT

Indian agent is not permitted to represent more than one foreign bidder (Supplier / Manufacturer / Contractor) in a particular tender. In case, an Indian agent represents more than one foreign bidder (Supplier / Manufacturer / Contractor) in a particular tender, then offers of such foreign bidders (Suppliers / Manufacturers / Contractors) shall be rejected in that tender.

9.0 CUSTOMS DUTY:

In terms of Sl. No. 404 of the Customs Notification No.50/2017-Cus dated 30.06.2017, imports of the items specified in List 33 of the Notification are subject to levy of concessional rate of customs duty (BCD Nil & concessional IGST) subject to conditions specified therein (Condition No. 48). The Condition No. 48 along with List33 of the said notification has been amended vide Customs Notification No. 30/2024- Customs dated 23.07.2024 and subsequently vide latest Custom Notification No. 45/2025- Customs dated 24.10.2025 (S. No. 229 of Table I, List 16, and Condition No. 28).

Bidders shall take note of the prevailing customs notifications including the latest amendment vide gazette Notification No. 45/2025- Customs dated 24.10.2025 while quoting

their prices. Bidder should consider concessional Customs Duty only for those items appearing in List-16 therein. Items of imports other than those appearing in List-16 of the said gazette notification shall be considered as duty payable on merit basis in their respective bid. OIL shall issue the requisite undertaking/certificate on request from Contractor for availing concessional rate of customs duty only against the items explicitly covered under List-16 of Customs Notification No. 45/2025- Customs dated 24.10.2025 or against any other item(s) subsequently declared by the competent authority during the tenure of the contract to be duty exempted/concessional. However, in the event of refusal/denial by Customs Authority to accord exemption/concession of Customs Duty against import of items which are explicitly covered under List-16 of Notification No. 45/2025- Customs dated 24.10.2025, such applicable customs duty shall be reimbursed at actual by OIL to the Contractor on submission of documentary evidence.

Items other than those appearing in List-16 of the aforesaid gazette notification, if to be imported by the Contractor for the purpose of execution of contract against this tender, the same shall be considered as duty payable on merit basis and the applicable customs duty thereof must be included by the bidder in their respective bid value. OIL will not issue any Undertaking / Certificate towards customs duty concession/exemption for those items (not included in List-16 of Notification) and the duty payable on merit shall be borne by the Contractor. However, any other item if subsequently notified by the competent authority to be Duty free / concessional during the tenure of the contract, Company/ Append will issue requisite Certificate / Undertaking for Contractor to avail the Customs Duty benefit and the duty benefit must be passed on to OIL. Additionally, for all those items against which the bidder considers the Customs Duty on merit, the list specifying the Customs Duty Rate (percentage) may be furnished, so that subsequent increase/decrease in Customs Duty, if any shall be reimbursed / recovered by OIL as the case may be on documentary evidence.

Bidders should submit the list of items which are to be imported for execution of the contract against this tender as per Proforma-A prudently along with their bid. Undertaking/Certificate for availing concessional rate of Customs Duty shall be issued by OIL only for the eligible items, provided the same are included in the Proforma-A submitted by the bidder.

Similarly, the domestic supply of such goods would attract 18% GST (i.e. IGST or CGST & SGST/UTGST) on submission of EC in terms of GST Notification no. 03/2017 dated 28.6.2017 and amended vide Notification Nos. 08/2022 dated 13.07.2022 and 11/2025 dated 17.9.2025. If the standard/merit rate of GST on the specified good itself is 18% or lower, then such lower rate of GST would apply directly without invoking Notification No. 3/2017.

Note:

a) The customs Notifications are subject to change as per Government guidelines and the provisions ruling at the time of Bid Closing will be applicable.

b) The Bidder has to re-export the items / equipment / consumables after completion of the contract in case of imported items / equipment / consumables. The bidder will be fully responsible to pay the customs duty in case the items / equipment / consumables are taken by the Contractor to area where customs duty benefit is not applicable. This is applicable in case OIL issues recommendatory letter for availing concessional customs duty for import of goods.

c) OIL will allow block transfers and issue Essentiality Certificate against applications only when Transferor and Transferee are same.

10.0 PURCHASE PREFERENCE CLAUSE:

10.1 MSE Policy:

Purchase Preference to Micro and Small Enterprises is applicable for this tender.

i. Documentation required to be submitted by MSEs:

Categorization and various criteria applicable to MSE bidders shall be guided by the **Gazette Notification No. CG-DL-E-26062020-220191 dated 26.06.2020 issued by MINISTRY OF MICRO, SMALL AND MEDIUM ENTERPRISES**

The bidder claiming the MSE status (MSE-General, MSE-SC / ST, MSE-Woman) against this tender has to submit following document for availing the benefits applicable to MSEs:

- Udyam Registration Number with Udyam Registration Certificate

In case bidding MSE is owned by Schedule Caste or Schedule Tribe entrepreneur or Woman Entrepreneur, valid documentary evidence issued by the agency who has registered the bidder as MSE owned by SC / ST entrepreneur / Woman Entrepreneur should also be enclosed.

ii. In case participating MSEs quote price within price band of L1+15%, such MSE shall be considered for award of contract by bringing down their price to L1 price in a situation where L1 price is from someone other than an MSE.

iii. In case of more than one such MSE qualifying for 15% purchase preference, the contract shall be awarded to lowest eligible MSE amongst the MSEs qualifying for 15% purchase preference.

iv. Provisions such as seeking support from another company by way of technical collaboration, submission of JV bid, consortium bid etc., wherever allowed in the tender document shall be available to all interested bidders including MSEs. However, in case of submission of bids by MSEs, in order to avail the benefits reserved for MSEs (i.e. exemption from payment of EMD and purchase preference), the MSE bidder shall have to rely on their own strength or on the strength of another MSE only to meet the various tender requirements including technical and financial evaluation criteria. In that case, all the members of the Consortium, including the leader of the Consortium, should be eligible MSEs. Further, in case of bid from JVC (incorporated), in order to avail the above MSE benefits, the bidder, i.e., JVC shall have to be MSE unit.

10.2 MII Policy:

Purchase preference to MII - notified under Public Procurement (Preference to Make in India) Order, 2017 of Department for Promotion of Industry and Internal Trade (DPIIT), Govt. of India as revised vide Order No. P-45021/2/2017-PP (BE-II) dated 16th September 2020 (and as amended time to time) with modifications as notified vide MoPNG Order No. FP-20013/2/2017-FPPNG-Part (4) (E-41432) dated 26th April 2022, shall be applicable in this tender (Refer Appendix-A). Bidders to check the provisions of the Notification and their eligibility to bid and any claim on Purchase preference. Purchase preference will be applicable as per the Notification(s) and any amendment thereof.

10.3 Award Criteria:

Contract shall be awarded for the entire scope of work under this tender subject to concurrent application of Public Procurement Policy for MSE Order 2012 and PP(MII) Order 2017 as per Order No. F.1/4/2021-PPD dated 18.05.2023 issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Govt. of India (enclosed as Appendix-B) and any subsequent amendment thereto.

11.0 GENERAL NOTES:

11.1 In case bidder takes exception to any clause of bidding document not covered under BEC, then the Company has the discretion to load or reject the offer on account of such exception if the bidder does not withdraw/modify the deviation when/as advised by company. The loading so done by the company will be final and binding on the bidders. No deviation will however be accepted in the clauses covered under BEC.

11.2 To ascertain the substantial responsiveness of the bid the Company reserves the right to ask the bidder for clarification in respect of clauses covered under BEC also and such clarifications fulfilling the BEC clauses in toto must be received on or before the deadline given by the company, failing which the offer will be evaluated based on the submission. However, mere submission of such clarification shall not make the offer responsive, unless company is satisfied with the substantial responsiveness of the offer.

11.3 If any of the clauses in the BEC contradict other clauses of the Bid Document elsewhere, then the clauses in the BEC shall prevail.

11.4 Bidder(s) must note that requisite information(s)/financial values etc. as required in the BEC & Tender are clearly understandable from the supporting documents submitted by the Bidder(s); otherwise, Bids shall be rejected.

11.5 OIL will not be responsible for delay, loss or non-receipt of applications for participating in the bid sent by mail and will not entertain any correspondence in this regard.

11.6 The originals of such documents [furnished by bidder(s)] shall have to be produced by bidder(s) to OIL/Company as and when asked for.

12.0 SUBMISSION OF FORGED DOCUMENTS:

Bidders should note that Company (OIL) may verify authenticity of all the documents /certificates / information submitted by the bidder(s) against the tender. In case at any stage of tendering process or Contract execution etc., if it is established that bidder has submitted forged documents / certificates / information towards fulfilment of any of the tender / contract conditions, Company shall immediately reject the bid of such bidder(s) or cancel / terminate the contract besides taking action as per OIL's Banning Policy dated 6th January 2017, available in the OIL's website. Accordingly, service provider/vendor to submit the Undertaking of authenticity of information/documents submitted as per Proforma-N.

13.0 VERIFICATION AND CERTIFICATION OF DOCUMENTS BY INDEPENDENT THIRD-PARTY INSPECTION AGENCIES:

13.1 Oil India Limited (OIL) has engaged the following 17 (Seventeen) Independent Inspection Agencies for a period of 04 (Four) years up to 06.06.2028 to verify and certify various documents submitted by the bidders required against BEC/BRC of the tender:

Sl.No	Name of Independent Inspection Agency	Contact E-mail ID
i.	M/s. Alfred H Knight India Pvt. Ltd.	a. rkjain@ahkgroup.com b. pradeep.mathur@ahkgroup.com c. info@ahkgroup.com
ii.	M/s. TUV India Private Limited	a. noida@tuv-nord.com b. mumbai@tuv-nord.com c. salim@tuv-nord.com
iii.	M/s Conformity India International Private Limited	a. mktg@ciindia.in
iv.	M/s Ravi Energic Private Limited	a. baroda@ravienergic.com b. tpia@ravienergic.com
v.	M/s SGS India Private Limited	a. dhaval.vora@sgs.com b. sgs.india@sgs.com
vi.	M/s Assure Quality Management Certification Services Private Limited	a. aqmcs@aqmcs.com
vii.	M/s. IRCLASS Systems and Solutions Private Limited	a. industrial_services@irclass.org b. Bhavesh.satam@irclass.org
viii.	M/s. TÜV Rheinland (India) Pvt. Ltd.	a. Shailesh.deotale@ind.tuv.com b. Kaushal.gohil@ind.tuv.com c. info@ind.tuv.com d. ravi.kumar@ind.tuv.com
ix.	M/s Gulf LIoyds (India) Ltd.	a. contact@gulfllloyds.com b. inspection@gulfllloyds.com
x.	M/s Baltic Testing India Pvt. Ltd.	a. office@balticcontrolindia.com
xi.	M/s Sanmarg Engineering Validation & Assessment	a. Amitra@sanmargeva.com
xii.	M/s Meenar Global Consultants LLP	a. sales@mgellp.in
xiii.	M/s Rites Limited	a. nrinspn@rites.com b. info@rites.com c. sbu.ninsp@rites.com
xiv.	M/s Bureau Veritas (India) Private Limited	a. bvindia.corporate@bureauveritas.com

xv.	M/s TUV SUD South Asia Private Limited	a. Hemant.chavan@tuvsud.com b. Jayashree.rane@tuvsud.com
xvi.	M/s Adornment Engineers India Private Limited	a. jks@adornmentengineers.com
xvii.	M/s TCRC Inspections Pvt. Ltd.	a. admin@tereinspections.com b. ashismallick@teregroup.com b. tenders@teregroup.com

13.2 Bidders are required to have their documents, as mandated under the Bid Evaluation Criteria (BEC) / Bid Rejection Criteria (BRC) of the tender, verified and certified by any one of the empanelled Independent Third-Party Inspection Agencies listed above. The Inspection Certificate, duly issued by the selected agency, must be submitted along with the Technical Bid. All costs related to verification and certification by the Third-Party Inspection Agencies shall be borne solely by the respective bidders. Payments in this regard shall be made directly by the bidders to the Inspection Agencies. OIL shall not be held responsible for any payment-related dispute between the bidders and the inspection agencies.

13.3 The verified and certified documents must be submitted along with the Technical Bid. Any bid submitted with un-verified supporting documents shall not be considered. However, in case a bidder submits its bid along with all relevant supporting documents as per BEC/BRC without getting all/some of them verified by the designated Independent Inspection agency, such bid can be provisionally considered, provided it is accompanied by an Undertaking by the Bidder on their official letterhead towards submission of the duly verified and certified copies/ Inspection Certificate within 07 (Seven) days from the actual date of bid opening. No reminders or clarifications will be issued by the Company in this regard, and failure to submit the verified/ certified documents within the stipulated time shall result in outright rejection of the bid, at the sole risk and responsibility of the bidder.

13.4 The methodology of verification/certification of documents followed by the agencies is broadly as under, but not limited to:

(a) It is the sole responsibility of the bidders intending to participate in the tender to thoroughly understand the requirements of the tender, particularly the documents required under BEC/BRC. The bidders must present all relevant documents to any of the empaneled third-party certifying agencies for verification/certification. Neither OIL nor the Inspection Agencies shall be responsible for the selection or appropriateness of the documents submitted for verification. It is entirely the bidder's responsibility to ensure that the appropriate documents are verified/certified in support of BEC/BRC compliance.

(b) The concerned Independent Third-Party Inspection Agencies shall depute their qualified/competent inspector to the Bidder's premises to check the original documents and certify the copies which the bidder shall submit along with their bids. OIL will reserve the right to ask the inspection agencies to verify the documents with source, if required at no extra cost to OIL. Verification/Certification of documents by OIL's empaneled third-party inspection agencies shall not automatically make the bidder techno- commercially-acceptable or eligible for award of contract.

(c) Verification/Certification of documents are normally categorized as under:

i. A General Requirement:

13.1.1 Check Bidder's PAN Card.
13.1.2 Check Bidder's GST Certificate.
13.1.3 Check Bidder's Certificate of Incorporation.
13.1.4 Power of Attorney.

ii. B Additional Documents: (If applicable against the tender)

13.1.5 Bidders general structure and organization.
13.1.6 Joint Ventures Agreements – To cross-check with JV Partners.
13.1.7 Consortium Agreements – To cross-check with Consortium Partners.
13.1.8 Holding/Parent/Subsidiary/Sister Subsidiary/Co-Subsidiary Company.
13.1.9 To check the Share Holding pattern, Corporate Guarantee etc.

iii. C Technical Criteria

13.1.10 To check Experience Proof- Completion Certificates, Reference contact verification, Original Work Order/Contract Copy and any other document(s), if called for vide BEC/BRC of the Tender.
13.1.11 Health, Safety and Environmental Management Policy.

iv. D Financial Criteria

13.1.12 Line of credit, if incorporated in the tender.

Notes:

(i) Bidder's self-declared undertakings, Audited Balance Sheet & Profit-loss statement and/or CA certificate having UDIN are not required to be verified by the TPI agency. If any documents, LOI/LOA/Contracts, etc., submitted towards BEC/BRC experience criteria are issued by Oil India Limited, such documents need not be verified by TPI agency.

(ii) Undertaking from TPI Agency as per format (PROFORMA-O) enclosed should be submitted along with the Bid.

In case of clarifications sought by OIL against BEC/BRC, supporting documents (historical in nature) to those submitted in the original bid will also have to be verified from the same TPI agency which has originally verified their bid documents. OIL shall categorically mention the documents that are to be submitted with TPI verification in the clarification sought. In case the bidder fails to submit th e TPI verified documents, as sought by OIL, as part of their clarification, their offer will be liable for rejection.

14.0 DOCUMENT AUTHENTICITY UNDERTAKING:

Bidders should note that Company (OIL) may verify authenticity of all the documents /certificates / information submitted by the bidder(s) against the tender. In case at any stage of tendering process or Contract execution etc., if it is established that bidder has submitted forged documents / certificates / information towards fulfilment of any of the tender /

contract conditions, Company shall immediately reject the bid of such bidder(s) or cancel / terminate the contract besides taking action as per OIL's Banning Policy, available in the OIL's website. Accordingly, service provider / vendor to submit the Undertaking of authenticity of information/documents submitted as per PROFORMA-K.

15.0 LAND BORDER SHARING:

Bidders should submit an Undertaking that, their bid is compliant to Order No. F.No. 6/18/2019-PPD dated 23.07.2020 issued by Ministry of Finance, Department of Expenditure, Public Procurement Division, Govt. of India (including subsequent amendments thereto, if any), regarding restrictions on procurement from a bidder of a country which shares land border with India. Formats for submission of undertaking is enclosed as **Exhibit-I, II & III.**

16.0 COMPLIANCE OF THE COMPETITION ACT, 2002:

The bidder shall strictly comply with the provisions of the Competition Act, 2002, more particularly, Section-3 of the Act. Any violation of the provisions of the Act shall attract penal action under the Act.

NOTE TO BEC: All bidders are required to mandatorily submit the checklist on BEC (Bid Evaluation Criteria) and other relevant technical criteria as outlined in the tender document, along with their bids. Failure to furnish the completely filled checklist by the bidder will render the bid liable for rejection.

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