OIL INDIA LIMITED
RAJASTHAN PROJECT
JODHPUR

CORRIGENDUM
TENDER No. CJG8319P19

Amendment No. 3 Dated 23.08.2018 to Tender No. CJG8319P19 has been issued to incorporate the following changes in the tender clauses against Tender No. CJG8319P19 for Hiring of Wireline Logging Unit with Services for Rajasthan Project. The Bid Closing Date and Tender Sale has also been extended as under:

Bid Closing Date : 18.09.2018 (11.00 Hrs. IST)
Technical Bid Opening Date : 18.09.2018 (15.00 Hrs. IST)
Tender Sale Date : 11.09.2018 (17.30 Hrs. IST)

SRL. No.	PART / SECTION / PAGE NO.	ORIGINAL CLAUSE	AMENDED CLAUSE
1	**Part – 2, Bid Evaluation Criteria (BEC), Para 1.1, Page 21;**	**Bid Evaluation Criteria (BEC):** **1.1**OIL at its option may hire one more Loggin Unit with tools and accessories over and above the awarded quantity at same rates and terms and conditions of the CONTRACT. However, hiring period of subsequently hired / mobilized unit(s)/equipment/tool(s) shall be within the validity of the contract of the initially mobilized Units/equipment/tool(s) under this CONTRACT.	**Bid Evaluation Criteria (BEC):** **1.1**OIL at its option may hire one more Logging Unit with tools and accessories over and above the awarded quantity at same rates and terms and conditions of the CONTRACT. However, hiring period of subsequently hired / mobilized unit(s)/equipment/tool(s) shall be within the validity of the contract of the initially mobilized Units/equipment/tool(s) under this CONTRACT. The minimum deployment period once mobilized shall be 9 Months.
2	**Part-3, Section-I, General conditions of contract, Clause 2.2,**	**General Condition of Contract:** **2.2MOBILISATION/De-MOBILISATION TIME OF THE CONTRACT:** The **initial mobilization** of equipment, personnel etc. should be completed by Contractor within **90 days** from the date of LOA or mobilization Advice.	**General Condition of Contract:** **2.2MOBILISATION/De-MOBILISATION TIME OF THE CONTRACT:** The **initial mobilization** of equipment, personnel etc. should be completed by Contractor within **90 days** from the date of LOA or mobilization Advice.

	Page 29	**Subsequent Mobilization** of Special and Optional tools/service should be completed within **30 days** of Mobilization Notice from OIL.Mobilization shall be deemed to be completed when Contractor's equipment and manpower are placed at the nominated location in readiness to commence Work as envisaged under the Contract duly certified by the Company's authorized representative.	**Subsequent Mobilization** of Special and Optional tools/service should be completed within **60 days** of Mobilization Notice from OIL. Mobilization shall be deemed to be completed when Contractor's equipment and manpower are placed at the nominated location in readiness to commence Work as envisaged under the Contract duly certified by the Company's authorized representative.
3	**Part-3, Section-I, General conditions of contract, Clause 13.9, Page 39**	**GENERAL CONDITION OF CONTRACT:** **13.9** :Each party shall be responsible to make arrangements for the travel and stay etc. of the arbitrator pointed by it. Claimant shall also be responsible for making arrangements for travel/stay arrangements of the Presiding Arbitrator and the expenses incurred shall be shared equally by the parties. In case of sole arbitrator, OIL shall make all necessary arrangements for his travel, stay and the expenses incurred shall be shared equally by the parties.	**GENERAL CONDITION OF CONTRACT**: **13.9**: Each party shall be responsible to make arrangements for the travel and stay etc. of the arbitrator appointed by it. Claimant shall also be responsible for making arrangements for travel/stay arrangements of the Presiding Arbitrator and the expenses incurred shall be shared equally by the parties. In case of sole arbitrator, OIL shall make all necessary arrangements for his travel, stay and the expenses incurred shall be shared equally by the parties.
4	**Part-3, Section-I, General conditions of contract, Clause 17.4, Page 41**	17.0 **LIQUIDATED DAMAGES AND PENALTY FOR DEFAULT IN TIMELY MOBILISATION**: 17.1 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 @ 1/2% of contract value including mobilization cost, per week or part thereof of delay subject to maximum of 7.5%. Liquidated Damages will be reckoned from the expiry date of the scheduled mobilisation period as defined in para 2.2 above.	17.0 **LIQUIDATED DAMAGES FOR DEFAULT IN TIMELY MOBILISATION**: 17.1 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 @ 1/2% of contract value including mobilization cost, per week or part thereof of delay subject to maximum of 7.5%. Liquidated Damages will be reckoned from the expiry date of the scheduled mobilisation period as defined in para 2.2 above. **17.1.1 FOR DEFAULT IN INTERIM MOBILISATION OF SPECIAL EQUIPMENT/ TOOLS/SERVICES IN TIME :** Time is the essence of this Contract. In the event of the Contractor's default in interim mobilization of the Special

		17.2 If the Contractor fails to mobilise within 45 days after the stipulated date, then the Company reserves the right to cancel the Contract without any compensation whatsoever. 17.3 The parties agree that the sum specified above is not a penalty but a genuine pre-estimate of the loss/damage which will be suffered by OIL on account of delay/breach on the part of the Contractor and the said amount will be payable without proof of actual loss or damage caused by such delay/breach and without any demur and shall not be open for any dispute whatsoever. 17.4 Completion of the tendered job in time is of prime importance and mobilization is one of the critical element for achieving the same. Keeping this in view a penalty will be levied @ 1% of the total contract value per week of the delay to the maximum of 10% of the contract value. This penalty will be in addition to the above mentioned liquidated damages.	equipment/Tools/Services and Tools on call (optional) in time during the tenure of the contract, the Contractor shall be liable to pay liquidated damages at the rate of 0.5% of annual contract value including mobilization charge for the Special equipment/ Tools/Services and Tools on call (optional) per week or part thereof of delay subject to maximum of 7.5%. Liquidated Damages will be reckoned from the date after expiry of the scheduled mobilization time till arrival of the Tools/Services at site and the same are in readiness to commence work. 17.2 If the Contractor fails to mobilise within 45 days after the stipulated date, then the Company reserves the right to cancel the Contract without any compensation whatsoever. 17.3 The parties agree that the sum specified above is not a penalty but a genuine pre-estimate of the loss/damage which will be suffered by OIL on account of delay/breach on the part of the Contractor and the said amount will be payable without proof of actual loss or damage caused by such delay/breach and without any demur and shall not be open for any dispute whatsoever. 17.4 **Deleted**
5	**Part – 3 SECTION – III, Clause NO.1.1, Special Condition of**	**SPECIAL CONDITIONS OF CONTRACT** 1.1 Subsequent Mobilization: Subsequent Mobilization of Special and Optional tools/service should be completed within 30 days of Mobilization Notice from	**SPECIAL CONDITIONS OF CONTRACT** 1.1Subsequent Mobilization: Subsequent Mobilization of Special and Optional tools/service should be completed within 60 days of Mobilization Notice from OIL.

	Contract, Page No.97	OIL.	
6	**Part-3, Section-III, Special conditions of contract, Para 2.2., Page 97**	**Special Condition of Contract:** **2.2** The Logging Unit with all services and crew will initially be based at Rajasthan. The 2nd Logging Unit (additional unit), if mobilized, may need to be mobilized to Rajasthan Base or any stipulated well site camp located at far flung areas/anywhere within OIL's operational area in India. The contractor shall be given a 30 days' notice to demobilize 2nd Logging Unit upon completion of requirements.	**Special Condition of Contract:** **2.2** The Logging Unit with all services and crew will initially be based at Rajasthan. The 2nd Logging Unit (additional unit), if mobilized, may need to be mobilized to Rajasthan Base or any stipulated well site camp located at far flung areas/anywhere within OIL's operational area in India. The minimum deployment period once mobilized shall be 9 Months.The contractor shall be given a 15 days' notice to demobilize 2nd Logging Unit upon completion of requirements.
7	**Part-3, Section-III Special Condition of Contract. Page- 101**	**LOSS OR DAMAGE OF SUB-SURFACE EQUIPMENT:** **7.2** In case of malfunctioning of any tool, the Contractor will make good the Company the loss for idling of the rig @ **US $ 600.00 per hour for logging operation to be carried out in drilling rig and @ US $ 250.00 per hour for logging operation to be carried out in Work over rig**. However, the rig loss time on account of the following shall be attributable to Company's account and shall be excluded from computation of time for aforesaid recovery: a. Waiting for Company's instructions/weather conditions/HSE hazards / due to day break as per Company's requirement. b. Round trip due to deterioration of well condition resulting in held ups or tool stoppage or actual time spent in negotiating tool stoppage and hold up while running in or pulling out due to bad borehole conditions. c. Standby time due to radio silence during perforating operations.	**LOSS OR DAMAGE OF SUB-SURFACE EQUIPMENT:** 7.2 In case of malfunctioning of any tool, theContractor should repair/replace the malfunction within 6 hrs otherwise the Contractor will make good the Company the loss for idling of the rig @ **US $ 300.00 per hour for logging operation to be carried out in drilling rig and @ US $ 125.00 per hour for logging operation to be carried out in Work over rig**. However, the rig loss time on account of the following shall be attributable to Company's account and shall be excluded from computation of time for aforesaid recovery: a. Waiting for Company's instructions/weather conditions/HSE hazards / due to day break as per Company's requirement. b. Round trip due to deterioration of well condition resulting in held ups or tool stoppage or actual time spent in negotiating tool stoppage and hold up while running in or pulling out due to bad borehole conditions.

			c. Standby time due to radio silence during perforating operations.
8	**Part-3, Section-III, Page-100, Clause No. 4.25**	4.25 The Contractor shall make his own arrangements for an operating base and maintain required facilities at a place of his choice but should be convenient and near to the Company's area of operation so as to ensure carrying out of Operations in timely and smooth manner in the Area of Operations and to facilitate periodical inspection. Contractor shall also maintain the required spare parts, tools and other consumables in order to keep the Unit, Equipment & Tools in working condition throughout the Contract period. Contractor shall not charge any amount for creating any 11base (including new base) in India, to provide the services to the Company.	4.25 The Contractor shall make his own arrangements for an operating base and maintain required facilities at a place of his choice but should be convenient and near to the Company's area of operation so as to ensure carrying out of Operations in timely and smooth manner in the Area of Operations and to facilitate periodical inspection. Contractor shall also maintain the required spare parts, tools and other consumables in order to keep the Unit, Equipment & Tools in working condition throughout the Contract period. Contractor shall not charge any amount for creating any base (including new base) in India, to provide the services to the Company. Mobilization Notice will be given before 24 Hrs. of Job Readiness. The Inspection of Unit and tools shall be done at Contractor Base Camp/Well Site.
9	**Part – 3, SECTION - III, SPECIAL CONDITIONS OF CONTRACT, PAGE-97.**	Addition of New Clauses. **15.0 DEHIRED OF LOGGING UNITS AFTER MINIMUM GUARANTEED PERIOD:**	**15.0 DEHIRED OF LOGGING UNIT AFTER MINIMUM GUARANTEED PERIOD:** 15.1 Company may dehired 1st Logging Unit within 15 days notice after completion of minimum guaranteed period of 1(One) year. 15.2 Company may dehired 2nd Logging Unit within 15 days notice after completion of minimum guaranteed period of 9(Nine) Months.
	Part – 3, Section – II,	**Scope of Work**: **1.3** OIL, at its option may hire one more Logging Unit with thetools/ equipment/services over and above the awarded quantity at same rates, terms and conditions during the duration of the CONTRACT, for deployment in	**Scope of Work**: **1.3** OIL, at its option may hire one more Logging Unit with thetools/ equipment/services over and above the awarded quantity at same rates, terms and conditions during the duration of the CONTRACT, for deployment in

10	**Scope of work, Para 1.3, Page 52**	OIL's operational areas depending on requirement. However, hiring period of subsequently hired / mobilized units/tools/equipment/services shall be co-terminus with that of the initially mobilized units/tools/equipment/services under this CONTRACT. The Company shall give a separate notice to Contractor for mobilization of the 2nd Logging Unit with tools and equipment. The Contractor shall mobilize the 2nd Logging Unit (along with all equipment, services and crew) at the required location within **90 (Ninety) days** from the date of issuance of mobilization notice by the Company	OIL's operational areas depending on requirement. However, hiring period of subsequently hired / mobilized units/tools/equipment/services shall be co-terminus with that of the initially mobilized units/tools/equipment/services under this CONTRACT. The Company shall give a separate notice to Contractor for mobilization of the 2nd Logging Unit with tools and equipment. The Contractor shall mobilize the 2nd Logging Unit (along with all equipment, services and crew) at the required location within **90 (Ninety) days** from the date of issuance of mobilization notice by the Company.The minimum deployment period once mobilized shall be 9 Months.
11	**Table – 2, Sl. No. 5 (PS-5), Page 57**	**TABLE - 2: LIST OF DATA PROCESSING SERVICES REQUIRED** **PS-5:**i) Processing of data of through Tubing Reservoir Monitoring Services (in-elastic & sigma mode) to evaluate hydrocarbon saturation behind casing, identify fluid contacts, porosity estimation, and identification of mineralogy etc. **Quantification of oil, gas and water saturations.** ii) Water flow velocity re-computation from acquisition data including manual picking of water velocity. **All other answer products relevant to S-18 service.**	**TABLE - 2: LIST OF DATA PROCESSING SERVICE REQUIRED** **PS-5:**i) Processing of data of through Tubing Reservoir Monitoring Services (in-elastic & sigma mode) to evaluate hydrocarbon saturation behind casing, identify fluid contacts, porosity estimation, and identification of mineralogy etc. **Quantification of oil, gas and water saturations.** ii) Water flow velocity re-computation from acquisition data including manual picking of water velocity. **All other answer products relevant to S-4 service.**
12	**Part-3, Section-II, Scope of Work. Page No.58**	**SCOPE OF WORK.** **1.5.5 OPTIONAL TOOLS:** Contractor shall provide Tools/ Services listed in **Table-3** below, on call-out basis as and when required by Company. Company shall give a mobilization notice of **30 days** and Contractor shall mobilize the required Tools within this period and provide the Services to Company.	**SCOPE OF WORK.** **1.5.5 OPTIONAL TOOLS:** Contractor shall provide Tools/ Services listed in **Table-3** below, on call-out basis as and when required by Company. Company shall give a mobilization notice of **60 days** and Contractor shall mobilize the required Tools within this period and provide the Services to Company.

13	**Part-3 Section-II Page No.58**	**Table-3: LIST OF OPTIONAL TOOLS.**	**Table-3: LIST OF OPTIONAL TOOLS.**

	OIL's Code	Service Description	No. of tools require
1	OS-1	Down Hole Video	1
2	OS-2	Dynamic Formation Testing Services:	
		i) Dynamic Formation Testing Services with Pump Out Module, Spectral / Resonance Based Fluid Analyzer, quartz pressure gauge and Fluid samplers (PVT)	1
		ii) Dynamic Formation Testing Services with dual Packer.	1
3	OS-3	Multi Finger Imaging Tool Services (MIT) with 24 Finger Extended & 40 fingers Standard	1 (Each
4	OS-4	Elemental Capture Spectroscopy logging (ECS/GEM or equivalent)	1
5	OS-5	i)Through tubing bridge plug ii) Through-tubing cement dump bailer	1

	OIL's Code	Service Description	No. of tools required
1	OS-1	Down Hole Video	1
2	OS-2	Elemental Capture Spectroscopy logging (ECS/GEM or equivalent)	1

14	**Part-3 Section-II, Scope of Work. Page No.61**	**SCOPE OF WORK** **Customer Instrument Services:2.4.1** iii)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.	**SCOPE OF WORK.** **Customer Instrument Services:2.4.1** iii) 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."However party providing tool shall provide competitive manpower, system and tools for successful execution of the service. All explosives and Radioactive shall be handled by party providing these services"
15	**ANNEXURE - B16,Page-78**	**SERVICE CODE A-11:** i)CEMENT BOND EVALUATION SERVICES INCLUDING VARIABLE DENSITY TYPE OF LOGGING ii) BOREHOLE COMPENSATED SONIC SERVICE **RANGE:** a) Acoustic amplitude 0-100 mv b) VDL 200-1200 micro-sec c) GR 0-200 API, CCL. Travel time.	**SERVICE CODE A-11:** i)CEMENT BOND EVALUATION SERVICES INCLUDING VARIABLE DENSITY TYPE OF LOGGING ii) BOREHOLE COMPENSATED SONIC SERVICE **RANGE:** a) Acoustic amplitude 0-100 mv b) VDL 200-1200 micro-sec **OTHER FEATURES:** a) Combinable with GR/CCL
16	**Annexure - B19, Page 79**	**Service Code: A-14:** **CASING GUN PERFORATION USABLE WITH BIG HOLE AND DEEP PENETRATION CHARGES** **RANGE**: i)With EHD of minimum 0.7 inch and penetration of minimum 10.05 inches for Big hole charges, and ii) With EHD of minimum 0.34 inch and penetration of minimum 24.97 inches for deep penetration charges	**Service Code: A-14:** **CASING GUN PERFORATION USABLE WITH BIG HOLE AND DEEP PENETRATION CHARGES** **RANGE**: i)With EHD of minimum 0.59 inch and penetration of minimum 4.3 inches for Big hole charges, and ii) With EHD of minimum 0.34 inch and penetration of minimum 24.97 inches for deep penetration charges

17	**Annexure – B27, Page 85**	**Service Code: S-3:** **TUBING CONVEYED PERFORATION SERVICES (3.3/8" gun system 6 spf, 7" and 4.1/2" gun systems 12 spf)** **RANGE:** i) For 5.1/2 inch casing using 3.3/8 inch gun: EHD of minimum 0.33 inches and penetration minimum 36.5 inches, ii) For 7" casing using 41/2 inch gun: EHD of minimum 0.38 inches and penetration minimum 24 inches (Phasing: 45°/135°) iii) For 9.5/8" casing using 7 inch gun: EHD of minimum 0.29 inches and penetration minimum 24 inches (Phasing: 45°/135°)	**Service Code: S-3:** **TUBING CONVEYED PERFORATION SERVICES (3.3/8" gun system 6 spf, 7" and 4.1/2" gun systems 12 spf)** **RANGE:** i) For 5.1/2 inch casing using 3.3/8 inch gun: EHD of minimum 0.33 inches and penetration minimum 36.5 inches, ii) For 7" casing using 41/2 inch gun: EHD of minimum 0.29 inches and penetration minimum 24 inches (Phasing: 45°/135°) iii) For 9.5/8" casing using 7 inch gun: EHD of minimum 0.35 inches and penetration minimum 38 inches (Phasing: 45°/135°)
18	**Annexure – B32, Page 89**	**Service Code: OS-1: DOWNHOLE VIDEO.** **MEASUREMENT:** i) To see the downhole borehole condition, which include quality assurance, gas entry, water entry, fishing operations, detect casing or tubing leaks, spot mineral deposit, find scale corrosion and bacterial buildup. Examine the condition of downhole equipment, inspect the operation of downhole equipment, casing & perforation inspection and general problem identification. ii) Identifying fish in the hole and allow real-time viewing of moveable downhole structural equipment, such as safety valves opening and closing. iii) Should deliver video data to a CD in a mpg format as well as recording it to a VHS tape.	**Service Code: OS-1: DOWNHOLE VIDEO** **MEASUREMENT:** i) To see the downhole borehole condition, which include quality assurance, gas entry, water entry, fishing operations, detect casing or tubing leaks, spot mineral deposit, find scale corrosion and bacterial buildup. Examine the condition of downhole equipment, inspect the operation of downhole equipment, casing & perforation inspection and general problem identification. ii) Identifying fish in the hole and allow to take real-time high definition colour video with high transmission rate greater than at least 15 frames/second and that should include down view plus side view camera. iii) Color high definition camera with transmission rate

			greater than 20 frames per second should be able to run on Slickline as well as Coiled tubing on memory module. Contractor will supply a 2 1/4" OD coiled tubing circulating sleeve to protect the memory camera and battery housing and to facilitate the pumping of clean fluids in front of the camera view port iv) Should deliver video data to a CD in standard Viewing format.
19	**Annexure – B33, Page 90**	**Service Code: OS-2:DYNAMIC FORMATION TESTING SERVICES WITH PUMP OUT MODULE, SPECTRAL/ RESONANCE BASED FLUID ANALYZER , FLUID SAMPLERS, QUARTZ PRESSURE GAUGE AND DUAL PACKER** **MEASUREMENTS:** Dynamic formation testing and fluid sampling service with i) Single/Dual probe with spectral/ resonance based fluid analyzer. ii) Any number of pressure test in one run. iii) Formation and mud pressure with quartz pressure gauge, pressure gradient, flow rate and mobility. iv) Facility to collect minimum two PVT samples of 450 cc each or more and two non PVT 1000 cc each or more (may be combinable using 2 or more sample chambers for 1000 cc collection). v) Minimum two PVT and two Non- PVT sample bottles. vi) If required bidder has to provide the facility to collect more than two PVT/Non-PVT samples along with sample bottles. vii) Pump out module with ability to control flow rate down hole while sampling. viii) Live real time fluid analysis. ix) Capable of measuring viscosity, GOR and bubble point etc.	**Service Code: S-8:DYNAMIC FORMATION TESTING SERVICES WITH PUMP OUT MODULE, SPECTRAL/ RESONANCE BASED FLUID ANALYZER , FLUID SAMPLERS, QUARTZ PRESSURE GAUGE AND DUAL PACKER** **MEASUREMENTS:** Dynamic formation testing and fluid sampling service with i) Single/Dual probe combinable with spectral/ resonance/density based fluid analyzer. ii) Any number of pressure test in one run. iii) Formation and mud pressure with quartz pressure gauge, pressure gradient, flow rate and mobility. iv)Facility to collect minimum two PVT samples of 450 cc each or more and two non PVT 1000 cc each or more (may be combinable using 2 or more samplechambers for 1000 cc collection). v) Minimum two PVT and two Non- PVT sample bottles. vi) If required bidder has to provide the facility to collect more than two PVT/Non-PVT samples along with sample bottles**.** vii)Pump out module with ability to control flow rate down hole while sampling. viii) Live real time fluid analysis.

		x) Differentiation capability of formation fluid from filtrate while sampling in combination with resistivity measurement and takes only formation fluid sample. xi) Industry standard measurement related to Dual Packer.	ix) Capable of measuring viscosity/GOR or density of sample and bubble point etc. x) Differentiation capability of formation fluid from filtrate while sampling in combination with resistivity measurement and takes only formation fluid sample.
20	**Part-3, Section-IV, Page-107**	**PRICE PROFORMA-A1:** viii) The special services can be Mobilized and Demobilized up to 3 times.	**PRICE PROFORMA-A1:** viii) The Clause is deleted.
21	**Annexure -B7**	**ANNEXURE - B7** **SERVICE:INVADED ZONE RESISTIVITY FOR RXO MEASUREMENT WITH BOREHOLE CALIPER** INVESTIGATION DEPTH:1 inch to 1.5 inches	**ANNEXURE - B7** **SERVICE:INVADED ZONE RESISTIVITY FOR RXO MEASUREMENT WITH BOREHOLE CALIPER** INVESTIGATION DEPTH:0.5 inch to 1.5 inches
22	**ANNEXURE – B34**	**ANNEXURE – B34** **SERVICE: MULTI-FINGER IMAGING CALIPER** MEASURING RANGE: With a measuring range of 1.75" to 7.00" and 3.00" to 7.00"	**ANNEXURE – B34** **SERVICE: MULTI-FINGER IMAGING CALIPER** MEASURING RANGE:With a measuring range of 2.0" to 7.00" and 3.00" to 7.00"
23	**ANNEXURE - B17**	**ANNEXURE - B17** **SERVICE:** **A) BRIDGE PLUG SETTING** **B) RETAINER PACKER SETTING** **C) JUNK BASKET** OTHER FEATURES: i) Necessary Adapter kit for the above services will	**ANNEXURE - B17** **SERVICE:** **A) BRIDGE PLUG SETTING** **B) RETAINER PACKER SETTING** **C) JUNK BASKET** OTHER FEATURES: i) Contractor has to provide necessary adapter kits for

		be provided by the contractor. ii) Combinable with CCL.	plug /packer setting. **In case of Plugs/Packers other than "Baker Make", adapter kit will be provided by Company.** ii) Combinable with CCL.
24	**ANNEXURE-B22**	**ANNEXURE - B22** **SERVICE: TUBING, DRILL PIPE, CASING CUTTING AND DRILL COLLAR SEVERING/COLLIDING SERVICES** PRESSURE RATING: 10000 psi minimum for casing cutter & minimum 15000 psi for other all other cutters.	**ANNEXURE - B22** **SERVICE: TUBING, DRILL PIPE, CASING CUTTING AND DRILL COLLAR SEVERING/COLLIDINGSERVICES** PRESSURE RATING: 8000 psi minimum for casing cutter & minimum 15000 psi for other all other cutters.
25	**Part-3, Section-IV, Clause No.5.2, Page No. 105.**	5.2 For evaluation purpose, transportation charge for 75 trips, with average 500 KM both ways in each trip will be considered for the Unit. However, payments will be made at actual kilometer travelled.	5.2 For evaluation purpose, transportation charge for 75 trips, with average 800 KM both ways in each trip will be considered for the Unit. However, payments will be made at actual kilometer travelled.
26	**PART-3 SCTION-IV, PAGE-107, PRICE PROFORMA-A1**	**PROFORMA-A1** i) Mobilization charges of the Unit and Individual tools shall not exceed one month's rental charges of the Unit/tools. ii) Quoted mobilization charges should not be more than 7.5% of the Total Contract Value failing which the offer will be rejected. iii) De-mobilization should not be less than 5% of the Total Contract Value and if quoted in deficit or less than 5% of the quoted contract value, the offer will be rejected. iv) Price for all Standard and Special tools required must be quoted. Exclusion of any tools, except Optional tools, required shall lead to rejection of offer.	**PROFORMA-A1** i) Mobilization charges of the Unit and Individual tools shall not exceed one month's rental charges of the Unit/tools. ii) Quoted mobilization charges should not be more than 7.5% of the Total Contract Value and if quoted in excess the balance amount will be released at the end of the contract. iii) De-mobilization should not be less than 5% of the Total Contract Value and if quoted in deficit the balance amount shall be withheld till the end of the contract. iv) Price for all Standard and Special tools required must be quoted. Exclusion of any tools, except

		v) The total evaluated rental charges of the Unit including crew plus Standard and Special Tools for the Unit should not exceed 50% of the total estimated contract value. vi) The rental charges of logging Unit per month should not exceed 45% of the sum of the monthly rental Unit and Standard and Special Tools for the Unit. vii) Monthly rental charges should not be more than 5% of the CIF Value.	Optional tools, required shall lead to rejection of offer. v) The total evaluated rental charges of the Unit including crew plus Standard and Special Tools for the Unit should not exceed 50% of the total estimated contract value. vi) The rental charges of logging Unit per month should not exceed 45% of the sum of the monthly rental Unit and Standard and Special Tools for the Unit. vii) Monthly rental charges should not be more than 5% of the CIF Value.

Table-3: LIST OF OPTIONAL TOOLS. (ORIGINAL)

	OIL's Code	Service Description	No. of tools required
1	OS-1	Down Hole Video	1
2	OS-2	Dynamic Formation Testing Services:	
		i) Dynamic Formation Testing Services with Pump Out Module, Spectral / Resonance Based Fluid Analyzer, quartz pressure gauge and Fluid samplers (PVT)	1
		ii) Dynamic Formation Testing Services with dual Packer.	1
3	OS-3	Multi Finger Imaging Tool Services (MIT) with 24 Finger Extended & 40 fingers Standard	1 (Each)
4	OS-4	Elemental Capture Spectroscopy logging (ECS/GEM or equivalent)	1
5	OS-5	i)Through tubing bridge plug ii) Through-tubing cement dump bailer	1

Note: Bidders should quote for Optional tools/services, if they possess the same or provide the same by taking from third party /parties.

Table-3: LIST OF OPTIONAL TOOLS (AMENDED)

	OIL's Code	Service Description	No. of tools required
1	OS-1	Down Hole Video	1
2	OS-2	Elemental Capture Spectroscopy logging (ECS/GEM or equivalent)	1

Note: Bidders should quote for Optional tools/services, if they possess the same or provide the same by taking from third party /parties.

TABLE-1 LIST OF SPECIAL REQUIRED SERVICES(ORIGINAL)

B. Special Equipment / Tools/services: to mobilize / demobilize as per requirement				
25	S-1	Tool for high resolution bore hole imaging services using micro-electric arrays	1	1
26	S-2	Production Logging Services (PLT)	1	1
27	S-3	Tubing Conveyed Perforation Services (Including all accessories/ equipments required for achieving underbalance condition and killing of the well)	1	1
28	S-4	Through tubing reservoir monitoring tool (3 Detector or more)	1	1
29	S-5	Cement Evaluation and Pipe Inspection	1	1
30	S-6	Dipole Shear Sonic Imager	1	1
31	S-7	Pipe Conveyed Wire line Logging Services	1	1
32	TR-5	Data transmission	1	1

TABLE-1 LIST OF SPECIAL REQUIRED SERVICES (AMENDED)

B. Special Equipment / Tools/services: to mobilize / demobilize as per requirement				
25	S-1	Tool for high resolution bore hole imaging services using micro-electric arrays	1	1
26	S-2	Production Logging Services (PLT)	1	1
27	S-3	Tubing Conveyed Perforation Services (Including all accessories/ equipments required for achieving under balance condition and killing of the well)	1	1
28	S-4	Through tubing reservoir monitoring tool (3 Detector or more)	1	1
29	S-5	Cement Evaluation and Pipe Inspection	1	1
30	S-6	Dipole Shear Sonic Imager	1	1
31	S-7	Pipe Conveyed Wire line Logging Services	1	1
32	S-8	Dynamic Formation testing services with pump out module,Spectral/resonance based fluid analyzer,quartz pressure gauge and fluid sampler(PVT) and dual packer.	1	1
33	S-9	i) Through Tubing Bridge Plug ii) Through Tubing Cement Dump Bailer	1	1
34	S-10	Multi Finger Imaging Tool Services (MIT) with 24 Finger Extended & 40 fingers Standard	1 (Each)	1(Each)
32	TR-5	Data transmission	1	1

SPECIFICATION OF TOOL (ORIGINAL)

ANNEXURE - B25

SERVICE: TOOL FOR HIGH RESOLUTION BORE HOLE IMAGING SERVICES USING MICRO-ELECTRIC ARRAYS

Service Code: S-1		**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 7.7/8 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 degree Rotation : 0 to 360 degree Deviation : 0 to 90 degree Caliper : 6 to 16 inche		
VERTICAL RESOLUTION	0.2 inch in resistivity measurements.		
HOLE SIZE LIMIT	6 inch to 16 inch dia.		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	One copy Static colour image as well site product in 1:20 scale.		

ANNEXURE – B26

SERVICE: PRODUCTION LOGGING TOOL STACK SERVICES

Service Code: S-2		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	i)Temperature measurement: Platinum resistance thermometer with measurement range 5-150 deg C, resolution 0.01 deg or better, accuracy: +/- 1 deg C. ii) Pressure measurement: Quartz gauge measurements upto 10 Kpsi, resolution 0.1 psi or better, accuracy: +/- 20 psi. ii)GR, CCL iv) Fluid velocity measurement:		

	a) Full bore spinner type flowmeter, with indication of direction of measurements. b) Fluid velocity measurement: Diverted basket flowmeter or equivalent for measurement of flowrate in low multi phase flows in vertical or deviated well at stations along borehole with flow rate range 15-1000 bpd. v) Density measurement: Radioactive/Non-Radioactive type fluid density measurement, range 0 – 1.3 gm/cc, resolution 0.01 gm/cc or better, accuracy +/- 0.05 gm/cc vi) Water Hold up measurement– Capacitance or Resistivity based vii) Gas Hold up measurement- Refractive index or radioactive based.		
TOOL DIAMETER:	Suitable for running through 2.7/8, 3.1/2 inch tubing into 4.1/2 inch, 5 inch, 5.1/2 inch, 7 inch, 9.5/8 inch casing/liners in wells.		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		

ANNEXURE – B27

SERVICE: TUBING CONVEYED PERFORATION SERVICES (3.3/8" gun system 6 spf, 7" and 4.1/2" gun systems 12 spf)

Service Code: S-3		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	Tubing conveyed perforation services using a) $3^3/_8$ inch TCP gun: 6 SPF b) $4^1/_2$ inch gun: 12 spf c) 7 inch gun : 12 spf		

	Service type i) shoot and pull mechanism ii) shoot and drop mechanism		
FIRING HEAD:	Following type of firing head is required : i) Mechanical firing head ii) Hydraulic firing head iii) Redundant firing head (Hydraulic + Mechanical or Hydraulic + Hydraulic)		
OTHER ACCESSORIES:	i) Radioactive Marker Sub ii) Crossovers iii) **Bidder has to provide all other standard accessories of TCP assembly required for all TCP jobs.**		
CHARGE TYPE:	HMX, API- RP43/19B,		
RANGE:	i) For 5.1/2 inch casing using 3.3/8 inch gun: EHD of minimum 0.33 inches and penetration minimum 36.5 inches, ii) For 7" casing using 41/2 inch gun: EHD of minimum 0.38 inches and penetration minimum 24 inches (Phasing: 45°/135°) iii) For 9.5/8" casing using 7 inch gun: EHD of minimum 0.29 inches and penetration minimum 24 inches (Phasing: 45°/135°)		
TOOL DIAMETER:	To be capable of running through $5^{1}/_{2}$ inch, 7 inch and 9.5/8 inch casing		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	12000 psi minimum		

ANNEXURE – B28

SERVICE: THROUGH TUBING RESERVOIR MONITORING TOOL {Three (3) Detector or more}

Service Code: S-4		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	i) **Tool should have an electronic neutron generator to produce 14 Mev fast neutrons with high resolutions three (3) detector or more based spectroscopy measurement system.** ii) **Tool outer diameter suitable to operate through tubing of $2^{7}/_{8}$ inch OD (ID: 2.44 inches).** iii) **Tool must be able to operate in three (3) independent modes: Carbon-oxygen, Sigma & Oxygen Activation modes providing different independent measurements.**		
MEASUREMENTS	i) Pulsed neutron decay sigma and porosity. ii) Porosity measurement range : 0-60 p.u. iii) Pulsed neutron decay Ca/Si ratio and dual detector C/O, saturation measurement. iv) Measurements to determine **oil, gas and water saturation** in formation with low/ mixed and unknown water salinity, identification of formation fluid contacts, measurement of formation porosity, identification of mineralogy and lithology. v) **Water, Oil & Gas saturation quantification.** vi) Water velocity by oxygen activation principle for up and down flows behind pipes or inside casing in station mode.		
VERTICAL RESOLUTION	**30 inches or better**		
TOOL DIAMETER	Industry standard to log through tubing of size $2^{7}/_{8}$ inch OD (ID-2.44 inch)		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	i) To be able to log in flowing and static condition. To be able to log in inelastic capture mode, capture sigma mode, sigma modes.		

	ii) All run-time quality checks to be provided.		

ANNEXURE - B29

SERVICE: TOOL FOR CEMENT EVALUATION AND PIPE INSPECTION

Service Code: S-5		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	360° evaluation of cement bonding with casings /liners, using ultrasonic / pizeo-electric signals / pulses.		
MEASUREMENTS:	i) Acoustic impedance image with resolution to distinguish, liquid, cement slurry behind casing. ii) Identification of cement channels or voids of width 1.25 inch or more. 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, $5^1/_2$, 7 & $9^5/_8$ inch casing/liner with high deviation upto 85°.		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		
OTHER FEATURES:	Processed data is required to be provided at well site as a standard presentation along with field logs. Note: Both Cement Evaluation and Pipe Inspection services must be carried out in a single run, using single tool or combination of tools.		

ANNEXURE – B30

SERVICE: DIPOLE SHEAR SONIC IMAGER

Service Code: S-6		**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		
HOLE SIZE LIMIT	6 inch to 17.5 inch dia.		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	i) **Minimum** 2 dipole transmitter orthogonally placed. ii) Two dipole measurement 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.		

ANNEXURE - B31

SERVICE: PIPE CONVEYED WIRELINE LOGGING SERVICES

Service Code: S-7		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	Pipe conveyed wire line logging equipments (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.		
TOOL DIAMETER	Industry Standard to log wells mostly drilled with 8 ½ ” Bit, 12 ¼ ” and 17 ½” bit.		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		

ANNEXURE – B32

SERVICE: DOWN HOLE VIDEO

Service Code: OS-1		**Bidder’s Code:**	
OIL's Required Specifications		**Bidder’s Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	iv) To see the downhole borehole condition, which include quality assurance, gas entry, water entry, fishing operations, detect casing or tubing leaks, spot mineral deposit, find scale corrosion and bacterial buildup. Examine the condition of downhole equipment, inspect the operation of downhole equipment, casing & perforation inspection and general problem identification. v) Identifying fish in the hole and allow real-time viewing of moveable downhole structural equipment, such as safety valves opening and closing. vi) Should deliver video data to a CD in a mpg format as well as recording it to a VHS tape.		
TOOL DIAMETER:	To be capable of running in minimum 6 inch to max. 20 inch.		
TEMPERATURE RATING:	257° F Minimum.		
PRESSURE RATING:	10000-15000 psi		

ANNEXURE – B33

SERVICE: DYNAMIC FORMATION TESTING SERVICES WITH PUMP OUT MODULE, SPECTRAL/ RESONANCE BASED FLUID ANALYZER , FLUID SAMPLERS, QUARTZ PRESSURE GAUGE AND DUAL PACKER.

Service Code: OS-2	**Bidder’s Code:**	

OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	Dynamic formation testing and fluid sampling service with xii) Single probe with spectral/ resonance based fluid analyzer. xiii) Any number of pressure test in one run. xiv) Formation and mud pressure with quartz pressure gauge, pressure gradient, flow rate and mobility. xv) Facility to collect minimum two PVT samples of 450 cc each or more and two non PVT 1000 cc each or more (may be combinable using 2 or more sample chambers for 1000 cc collection). xvi) Minimum two PVT and two Non- PVT sample bottles. xvii) If required bidder has to provide the facility to collect more than two PVT/Non-PVT samples along with sample bottles. xviii) Pump out module with ability to control flow rate down hole while sampling. xix) Live real time fluid analysis. xx) Capable of measuring viscosity, GOR and bubble point etc. xxi) Differentiation capability of formation fluid from filtrate while sampling in combination with resistivity measurement and takes only formation fluid sample. xxii) Industry standard measurement related to Dual Packer.		
RESOLUTION	Quartz Gauge: 0.01 psi (0-15000 psi) SG : 0.1 psi (0–15000 psi)		
TOOL DIAMETER	6" to 12.1/4" dia or more		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	**i)** Different types and sizes of probes are to be provided as per technical requirement to make the Dynamic		

	Formation Testing job successful. **ii)** Provision to provide mobility values at drill site and bring out gradient plots. Pre-test summary sheet with details of pretest data and as per format provided by company. **iii)** Dual Packer facility.		

ANNEXURE – B34

SERVICE: MULTI-FINGER IMAGING CALIPER

Service Code: OS-3		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	Tool should be capable of making highly accurate radial measurements of the internal diameter of tubing and casing strings. Any other measurements that the tool is capable of recording.		
TOOL TYPE:	i) 24 finger extended and ii) 40 finger standard readings		
TOOL OD:	i) 24 finger extended: 1.69" ii) 40 finger standard: 2.75"		
MEASURING RANGE:	With a measuring range of 1.75" to 7.00" and 3.00" to 7.00"		
RADIAL RESOLUTION:	Tool should at least have a 0.005"- 0.007" radial resolution		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		

SERVICE: ELEMENTAL CAPTURE SPECTROSCOPY LOGGING **ANNEXURE – B35**

Service Code: OS-4		**Bidder's Code:**	
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 6 inch to max. 20 inch.		
TEMPERATURE RATING:	350° F Minimum.		
PRESSURE RATING:	20000 psi minimum		

ANNEXURE - B36

SERVICE: i) THROUGH TUBING BRIDGE PLUG FOR $5^1/_2$, 7 & $9^5/_8$ INCH CASINGS
ii) THROUGH TUBING CEMENT DUMP BAILER FOR $5^1/_2$, 7 & $9^5/_8$ INCH CASING

Service Code: OS-5		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	i) Through tubing bridge pug setting tool with accessories for setting bridge plug in $5^1/_2$, 7 & $9^5/_8$ inch casing and **5 inch liners.** ii) Through tubing cement dump bailer tool for dumping cement on bridge plug.		
TOOL DIAMETER:	To be capable of running through 2.7/8", **3.1/2"** tubing.		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		
OTHER FEATURES:	i) The required plugs, adapter kits & Cement to be provided by the contractor. At any time Contractor shall have one plug available with them for each size of casing. **ii) Positive Displacement Dump Bailer to place the cement plug (minm. 3 metres, maxm. 4 metres; as required) above the through tubing Bridge Plug.**		

AMMENDED SPECIFICATION OF SPECIAL TOOL REQUIRED

ANNEXURE - B25

SERVICE: TOOL FOR HIGH RESOLUTION BORE HOLE IMAGING SERVICES USING MICRO-ELECTRIC ARRAYS

Service Code: S-1		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	iv) 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. v) At least 59% coverage in 7.7/8 inch hole in one pass. vi) Each caliper arm must have independent electronics.		
MEASURING RANGE:	Micro resistivity : 0.2 to 2000 ohm m Azimuth : 0 to 360 degree Rotation : 0 to 360 degree Deviation : 0 to 90 degree Caliper : 6 to 16 inche		
VERTICAL RESOLUTION	0.2 inch in resistivity measurements.		
HOLE SIZE LIMIT	6 inch to 16 inch dia.		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	One copy Static colour image as well site product in 1:20 scale.		

ANNEXURE – B26

SERVICE: PRODUCTION LOGGING TOOL STACK SERVICES

Service Code: S-2	**Bidder's Code:**	
OIL's Required Specifications	**Bidder's Specification**	**Compliance/ Non-compliance**

MEASUREMENTS:	i)Temperature measurement: Platinum resistance thermometer with measurement range 5-150 deg C, resolution 0.01 deg or better, accuracy: +/- 1 deg C. ii) Pressure measurement: Quartz gauge measurements upto 10 Kpsi, resolution 0.1 psi or better, accuracy: +/- 20 psi. ii)GR, CCL iv) Fluid velocity measurement: a) Full bore spinner type flowmeter, with indication of direction of measurements. b) Fluid velocity measurement: Diverted basket flowmeter or equivalent for measurement of flowrate in low multi phase flows in vertical or deviated well at stations along borehole with flow rate range 15-1000 bpd. v) Density measurement: Radioactive/Non-Radioactive type fluid density measurement, range 0 – 1.3 gm/cc, resolution 0.01 gm/cc or better, accuracy +/- 0.05 gm/cc vi) Water Hold up measurement– Capacitance or Resistivity based vii) Gas Hold up measurement- Refractive index or radioactive based.		
TOOL DIAMETER:	Suitable for running through 2.7/8, 3.1/2 inch tubing into 4.1/2 inch, 5 inch, 5.1/2 inch, 7 inch, 9.5/8 inch casing/liners in wells.		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		

ANNEXURE – B27

SERVICE: TUBING CONVEYED PERFORATION SERVICES (3.3/8" gun system 6 spf, 7" and 4.1/2" gun systems 12 spf)

Service Code: S-3		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	Tubing conveyed perforation services using a) $3^3/_8$ inch TCP gun: 6 SPF b) $4^1/_2$ inch gun: 12 spf c) 7 inch gun : 12 spf Service type i) shoot and pull mechanism ii) shoot and drop mechanism		
FIRING HEAD:	Following type of firing head is required : i) Mechanical firing head ii) Hydraulic firing head iii) Redundant firing head (Hydraulic + Mechanical or Hydraulic + Hydraulic)		
OTHER ACCESSORIES:	i) Radioactive Marker Sub ii) Crossovers iii) **Bidder has to provide all other standard accessories of TCP assembly required for all TCP jobs.**		
CHARGE TYPE:	HMX, API- RP43/19B,		
RANGE:	i) For 5.1/2 inch casing using 3.3/8 inch gun: EHD of minimum 0.33 inches and penetration minimum 36.5 inches, ii) For 7" casing using 41/2 inch gun: EHD of minimum 0.38 inches and penetration minimum 24 inches (Phasing: 45°/135°) iii) For 9.5/8" casing using 7 inch gun: EHD of minimum 0.29 inches and penetration minimum 24 inches (Phasing: 45°/135°)		
TOOL DIAMETER:	To be capable of running through $5^1/_2$ inch, 7 inch and		

	9.5/8 inch casing		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	12000 psi minimum		

ANNEXURE – B28

SERVICE: THROUGH TUBING RESERVOIR MONITORING TOOL {Three (3) Detector or more}

Service Code: S-4		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	iv) **Tool should have an electronic neutron generator to produce 14 Mev fast neutrons with high resolutions three (3) detector or more based spectroscopy measurement system.** v) **Tool outer diameter suitable to operate through tubing of $2^{7}/_{8}$ inch OD (ID: 2.44 inches).** vi) **Tool must be able to operate in three (3) independent modes: Carbon-oxygen, Sigma & Oxygen Activation modes providing different independent measurements.**		
MEASUREMENTS	vii) Pulsed neutron decay sigma and porosity. viii) Porosity measurement range : 0-60 p.u. ix) Pulsed neutron decay Ca/Si ratio and dual detector C/O, saturation measurement. x) Measurements to determine **oil, gas and water saturation** in formation with low/ mixed and unknown water salinity, identification of formation fluid contacts, measurement of formation porosity, identification of mineralogy and lithology. xi) **Water, Oil & Gas saturation quantification.** xii) Water velocity by oxygen activation principle for up and down flows behind pipes or inside casing in station mode.		
VERTICAL RESOLUTION	**30 inches or better**		
TOOL DIAMETER	Industry standard to log through tubing of size $2^{7}/_{8}$ inch OD (ID-2.44 inch)		

TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	iii) To be able to log in flowing and static condition. To be able to log in inelastic capture mode, capture sigma mode, sigma modes. iv) All run-time quality checks to be provided.		

ANNEXURE - B29

SERVICE: TOOL FOR CEMENT EVALUATION AND PIPE INSPECTION

Service Code: S-5		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	360° evaluation of cement bonding with casings /liners, using ultrasonic / pizeo-electric signals / pulses.		
MEASUREMENTS:	vii) Acoustic impedance image with resolution to distinguish, liquid, cement slurry behind casing. viii) Identification of cement channels or voids of width 1.25 inch or more. ix) Cement strength. x) Mud attenuation and acoustic velocity.(optional; only if needed for cement map). xi) Inside diameter and thickness of casing. xii) Casing corrosion evaluation.		
TOOL DIAMETER:	Industry standard to log wells completed with 5, $5^1/_2$, 7 & $9^5/_8$ inch casing/liner with high deviation upto 85°.		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		
OTHER FEATURES:	Processed data is required to be provided at well site as a standard presentation along with field logs. Note: Both Cement Evaluation and Pipe Inspection services must be carried out in a single run, using single tool or combination of tools.		

ANNEXURE – B30

SERVICE: DIPOLE SHEAR SONIC IMAGE

Service Code: S-6		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS	vi) Delta T shear in cross dipole mode (fast slowness & slow slowness with direction). vii) Delta T Stoneley iii) Delta T Compressional		
HOLE SIZE LIMIT	6 inch to 17.5 inch dia.		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	iii) **Minimum** 2 dipole transmitter orthogonally placed. iv) Two dipole measurement for redundancy. viii) Direction measurement with anisotropy measurement in single run. ix) Measurement to compute absolute value of effective permeability from Stoneley. x) Measurements to compute formation anisotropy, identification of fracture orientation, geo-mechanical properties and borehole stability.		

ANNEXURE - B31

SERVICE: PIPE CONVEYED WIRELINE LOGGING SERVICES

Service Code: S-7		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
	Pipe conveyed wire line logging equipments (TLC/TPL or equivalent) with following minimum features: iv) Tool protection in holes with large and medium radius of curvature. v) Mud circulation through drill pipe. vi) Multiple wet connections without tripping tools.		

TOOL DIAMETER	Industry Standard to log wells mostly drilled with 8 ½ ” Bit, 12 ¼ ” and 17 ½” bit.		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		

ANNEXURE – B33

SERVICE: DYNAMIC FORMATION TESTING SERVICES WITH PUMP OUT MODULE, SPECTRAL/ RESONANCE BASED FLUID ANALYZER , FLUID SAMPLERS, QUARTZ PRESSURE GAUGE AND DUAL PACKER.

Service Code: S-8		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	Dynamic formation testing and fluid sampling service with i) Single/Dual probe combinable with spectral/ resonance/density based fluid analyzer. ii) Any number of pressure test in one run. iii) Formation and mud pressure with quartz pressure gauge, pressure gradient, flow rate and mobility. iv)Facility to collect minimum two PVT samples of 450 cc each or more and two non PVT 1000 cc each or more (may be combinable using 2 or more samplechambers for 1000 cc collection). v)Minimum two PVT and two Non- PVT sample bottles. vi) If required bidder has to provide the facility to collect more than two PVT/Non-PVT samples along with sample bottles. vii) Pump out module with ability to control flow rate down hole while sampling. viii) Live real time fluid analysis. ix) Capable of measuring viscosity/GOR or density of sample and bubble point etc. x) 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 (0-15000 psi) SG : 0.1 psi (0–15000 psi)		
TOOL DIAMETER	6" to 12.1/4" dia or more		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	**iv)** Different types and sizes of probes are to be provided as per technical requirement to make the Dynamic Formation Testing job successful. **v)** Provision to provide mobility values at drill site and bring out gradient plots. Pre-test summary sheet with details of pretest data and as per format provided by company. **vi)** Dual Packer facility.		

ANNEXURE – B34

SERVICE: MULTI-FINGER IMAGING CALIPER

Service Code: S-9		**Bidder's Code:**	
OIL's Required Specifications		**Bidder's Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	Tool should be capable of making highly accurate radial measurements of the internal diameter of tubing and casing strings. Any other measurements that the tool is capable of recording.		
TOOL TYPE:	iii) 24 finger extended and iv) 40 finger standard readings		
TOOL OD:	i) 24 finger extended: 1.69” ii) 40 finger standard: 2.75”		
MEASURING RANGE:	With a measuring range of 1.75” to 7.00” and 3.00” to 7.00”		

RADIAL RESOLUTION:	Tool should at least have a 0.005”- 0.007” radial resolution		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		

ANNEXURE - B36

SERVICE: i) THROUGH TUBING BRIDGE PLUG FOR $5^1/_2$, 7 & $9^5/_8$ INCH CASINGS
ii) THROUGH TUBING CEMENT DUMP BAILER FOR $5^1/_2$, 7 & $9^5/_8$ INCH CASING

Service Code: S-10		**Bidder’s Code:**	
OIL's Required Specifications		**Bidder’s Specification**	**Compliance/ Non-compliance**
	iii) Through tubing bridge pug setting tool with accessories for setting bridge plug in $5^1/_2$, 7 & $9^5/_8$ inch casing and **5 inch liners.** iv) Through tubing cement dump bailer tool for dumping cement on bridge plug.		
TOOL DIAMETER:	To be capable of running through 2.7/8”, **3.1/2”** tubing.		
TEMPERATURE RATING:	300° F Minimum.		
PRESSURE RATING:	15000 psi minimum		
OTHER FEATURES:	iii)The required plugs, adapter kits & Cement to be provided by the contractor. At any time Contractor shall have one plug available with them for each size of casing. **iv) Positive Displacement Dump Bailer to place the cement plug (minm. 3 metres, maxm. 4 metres; as required) above the through tubing Bridge Plug.**		

AMMENDED SPECIFICATION OF OPTIONAL TOOL REQUIRED

SERVICE: DOWN HOLE VIDEO **ANNEXURE – B32**

Service Code: OS-1		**Bidder’s Code:**	
OIL's Required Specifications		**Bidder’s Specification**	**Compliance/ Non-compliance**
MEASUREMENTS:	vii) To see the downhole borehole condition, which include		

	quality assurance, gas entry, water entry, fishing operations, detect casing or tubing leaks, spot mineral deposit, find scale corrosion and bacterial buildup. Examine the condition of downhole equipment, inspect the operation of downhole equipment, casing & perforation inspection and general problem identification. viii) Identifying fish in the hole and allow real-time viewing of moveable downhole structural equipment, such as safety valves opening and closing. ix) Should deliver video data to a CD in a mpg format as well as recording it to a VHS tape.		
TOOL DIAMETER:	To be capable of running in minimum 6 inch to max. 20 inch.		
TEMPERATURE RATING:	257° F Minimum.		
PRESSURE RATING:	10000-15000 psi		

SERVICE: ELEMENTAL CAPTURE SPECTROSCOPY LOGGING			**ANNEXURE – B35**
Service Code: OS-4		**Bidder's Code:**	
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 6 inch to max. 20 inch.		
TEMPERATURE RATING:	350° F Minimum.		
PRESSURE RATING:	20000 psi minimum		

ORIGINAL SPECIFICATION OF SERVICE CODE: A-1

ANNEXURE - B6

SERVICE: DUAL LATERO LOG (DEEP AND MEDIUM FOCUSED LETEROLOG RESISTIVITY) SERVICES WITH SPONTANEOUS POTENTIAL

Service Code: A-1		**Bidder's Code:**	
OIL's Required Specifications		**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.		
DEPTH OF INVESTIGATION	LLD : 55-84 inches minimum LLS : 16-36 inches minimum		
RANGE:	LLD: 0.2–40,000 ohm m LLS: 0.2-2,000 ohm m		
ACCURACY	+/- 20 % at 0.2 ohm m +/- 5 % at 1-1000 ohm m +/- 10 % at 1000-2000 ohm m		
SAMPLING RATE	Minimum 2 samples/ft		
VERTICAL RESOLUTION	24 inches or better		
TOOL DIAMETER	Industry standard to log wells drilled with 6 inches to $17^{1}/_{2}$ inch bit		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	Fully combinable with service A-2, A-3, A-4etc.		

AMENDED SPECIFICATION OF SERVICE CODE: A-1

ANNEXURE - B6

SERVICE: DUAL LATERO LOG (DEEP AND MEDIUM FOCUSED LETEROLOG RESISTIVITY) SERVICES WITH SPONTANEOUS POTENTIAL

Service Code: A-1		**Bidder's Code:**	
OIL's Required Specifications		**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.		
DEPTH OF INVESTIGATION	LLD : 55-84 inches minimum LLS : 16-36 inches minimum		
RANGE:	LLD: 0.2–40,000 ohm m LLS: 0.2-2,000 ohm m		
ACCURACY	+/- 20 % at 0.2 ohm m +/- 5 % at 1-1000 ohm m +/- 10 % at 1000-2000 ohm m		
SAMPLING RATE	Minimum 2 samples/ft		
VERTICAL RESOLUTION	24 inches or better		
TOOL DIAMETER	Industry standard to log wells drilled with 6 inches to $17^{1}/_{2}$ inch bit		
TEMPERATURE RATING	300° F Minimum.		
PRESSURE RATING	15000 psi minimum		
OTHER FEATURES	Fully combinable with service A-2, A-3, A-4etc.		

Note: *High Resolution Laterolog Array (HRLA) or equivalent tool will also be acceptable for Service A-1 as per below given specification*

	Description
SERVICE	**HIGH RESOLUTION LATEROLOG ARRAY / RT EXPLORER OR EQUIVALENT**
MEASUREMENT	Formation resistivity with multiple depth of investigation (**at least four)**, all array curve should be Laterolog based measurements only
MEASUREMENT RANGE	1 to 2000 ohm m Resistivity
VERTICAL RESOLUTION	12 inch or better
TOOL DIAMETER	Suitable for Hole size 6 to 17.5 inch
TEMPERATURE RATING	300° F Minimum.
PRESSURE RATING	15000 psi minimum
WELL SITE PRODUCT	i) Resistivity profile at least at four depth of investigationwith 1ft or better vertical resolutions. ii) RT, RXO, DI (Diameter of invasion) on site using 1-D inversion. iii) Raw array curves.
COMBINABILITY	Combinable with A-2,A-3, A-4, A-5

PRICE PROFORMA –A (ORIGINAL CLAUSE)

Srl No.	PARTICULARS		JOB UNIT	QTY	Rate per JOB Per UNIT	TOAL COST
4	Transportation of unit, crew to the location & back (Average distance of 500 km both way for 75 trip considered for evaluation)T4		Per Km	37500		

PRICE PROFORMA –A (AMENDED)

Srl No.	PARTICULARS		JOB UNIT	QTY	Rate per JOB Per UNIT	TOAL COST
4	Transportation of unit, crew to the location & back (Average distance of 800 km both way for 75 trip considered for evaluation)T4		Per Km	60000		

TABLE - 2: LIST OF DATA PROCESSING SERVICES REQUIRED (ORIGINAL)

Sl No.	Service Code	Service	Post Processed data requirements
1	PS-1(I) PS-1(II) PS-1(III) PS-1(IV)	Dipole shear sonic imager (for data acquired by tool code **S-6)**	***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 ***II) Borehole stability analysis and prediction of safe mud window.*** ***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. ***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 solution 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.
2	PS-2	Cement Evaluation And Pipe Inspection (for data acquired by tool code **S-5**)	Processing of data for Cement Evaluation & Pipe Inspection. i) Azimuthal mapping of Casing to cement bond, Micro-annulus. ii) Casing ID/OD for pipe corrosion

Sl No.	Service Code	Service	Post Processed data requirements
3	PS-3	Tool for high resolution bore hole imaging services using micro-electric arrays (for data acquired by tool code **S-1**)	i) Static and dynamic image, image enhancement for structural, sedimentological study. ii) Interactive 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.
4	PS-4	Production logging services (for data acquired by tool code **S-2**)	Production Log Edit for Depth Matching and reporting, multi-phase hold-up diagnosis any kind of interpretation related to acquisition mode.
5	PS-5	Through tubing reservoir monitoring tool (3 Detector or more) (for data acquired by tool code **S-4**)	i) Processing of data of through Tubing Reservoir Monitoring Services (in-elastic & sigma mode) to evaluate hydrocarbon saturation behind casing, identify fluid contacts, porosity estimation, and identification of mineralogy etc. **Quantification of oil, gas and water saturations.** ii) Water flow velocity re-computation from acquisition data including manual picking of water velocity. **All other answer products relevant to S-18 service.**
6	P-Basic	Basic Log interpretation	Basic log Interpretation (probabilistic method viz. ULTRA or ELAN Plus or equivalent) for lithology/ mineralogy, effective & total porosity, permeability, fluid saturation & 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.

TABLE - 2: LIST OF DATA PROCESSING SERVICES REQUIRED (AMENDED)

Sl No.	Service Code	Service	Post Processed data requirements
1	PS-1(I)	Dipole shear sonic imager (for data acquired by tool code **S-6)**	***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
	PS-1(II)		***II) Borehole stability analysis and prediction of safe mud window.***
	PS-1(III)		***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.
	PS-1(IV)		***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 solution 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.
2	PS-2	Cement Evaluation And Pipe Inspection (for data acquired by tool code **S-5**)	Processing of data for Cement Evaluation & Pipe Inspection. i) Azimuthal mapping of Casing to cement bond, Micro-annulus. ii) Casing ID/OD for pipe corrosion

3	PS-3	Tool for high resolution bore hole imaging services using micro-electric arrays (for data acquired by tool code **S-1**)	i) Static and dynamic image, image enhancement for structural, sedimentological study. ii) Interactive 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.
4	PS-4	Production logging services (for data acquired by tool code **S-2**)	Production Log Edit for Depth Matching and reporting, multi-phase hold-up diagnosis any kind of interpretation related to acquisition mode.
5	PS-5	Through tubing reservoir monitoring tool (3 Detector or more) (for data acquired by tool code **S-4**)	i) Processing of data of through Tubing Reservoir Monitoring Services (in-elastic & sigma mode) to evaluate hydrocarbon saturation behind casing, identify fluid contacts, porosity estimation, and identification of mineralogy etc. **Quantification of oil, gas and water saturations.** ii) Water flow velocity re-computation from acquisition data including manual picking of water velocity. **All other answer products relevant to S-4 service.**
6	PS-8	Dynamic Formation Testing Services (for data acquired by tool code **S-8**)	Processing of Pretest data for i) Identification of fluid pressure gradient, fluid contacts, permeability, 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.
7	PS-10	Multi Finger Imaging Services (MIT) (for data acquired by tool code **S-10**)	Processing /QC of data of Multi Finger Imaging tool for corrosion evaluation, scale build up, erosion damage due to well flow, mapping perforations, confirmation of well completion items, milling damage, crushed/damaged tubulars etc. Data output as charts, tabulations, cross sections, 3D image of the ID of the tubulars where different radii are mapped to different colours etc. with reports.

8	P-Basic	Basic Log interpretation	Basic log Interpretation (probabilistic method viz. ULTRA or ELAN Plus or equivalent) for lithology/ mineralogy, effective & total porosity, permeability, fluid saturation & 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.

NOTE 1 : REVISED PRICE BID FORMAT (PROFORMA - A) has been provided in excel format as a separate file.

NOTE 2 : All other terms and conditions remain unchanged.

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