



TENDER ENQUIRY # PROC-SERVICES/CB/WS-4975/2021

**HIRING OF HIGH PERFORMANCE MUD ENGINEERING
SERVICES ALONG WITH MUD CHEMICALS UNDER RATE
RUNNING CONTRACT FOR A PERIOD OF TWO (02) YEARS
ON AS AND WHEN REQUIRED BASIS**

*Noted
Please.*

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ENCLOSURES

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INTRODUCTION / SCOPE OF WORK

Oil & Gas Development Company Limited (OGDCL), a leading exploration and production company, requires Services for **High Performance Mud Engineering Services along with Mud Chemicals** on as & when required basis at its wells in all regions of Pakistan i.e., North/ Centre /South Regions. For this purpose, OGDCL plans to enter into rate running Contract for a period of Two (02) years and extendable further with mutual consent on same terms and conditions.

The wells will be drilled with low-high weighted Water Base; High Performance (as needed); solid tolerant, inhibitive mud systems with tolerance to temperature of $\pm 150 - 450^{\circ}\text{F}$ at well TD.

The expected work volume and type of operation specified in the bid document are for reference purpose only. This is subject to change during the Contract period. The expected work volume and type of operation shall not be construed as a commitment or guarantee by the Company.

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TERMS OF REFERENCE (TOR)

INSTRUCTIONS TO BIDDERS

Bidder shall not leave (i) any item of requirement un-answered, (ii) blank, or (iii) Will not write only yes instead of giving details of the technical and miscellaneous requirements. Compliance to above will firm the completeness of their bid. A simple "YES" is not acceptable as answer.

1. The Bidder should be internationally recognized and well established in rendering drilling fluid engineering services & supply of Mud Chemicals and must have at least 10 years' Global experience.
2. All the supplies (materials & lab equipment) should be in good, A-one condition for the Performance of the services.
3. Each bidder should have well established base along with mud chemical yard with substantial quantities of mud chemicals (local & imported) in stock and adequate stock of the standard drilling fluid testing equipment and their spares, mud testing chemicals, reagents, consumables etc. as well as fully operational Drilling Fluids analytical / engineering lab equipped with standard/modern mud testing equipment in Pakistan. Moreover all chemicals bags & Lab reagents to be marked with manufacturing / expiry dates and shelf life of the chemical clearly mentioned on tags.
4. In case, the bidder has no permanent base and lab facilities in Pakistan it will provide in its technical proposal a plan as well as firm time schedule of establishing / commissioning the same as per clause-3, which should not be greater than 45 days after issuance of Letter of intent (LOI). The bidder will confirm the modus-operandi for emergency supplies in order to ensure continued supply of chemicals during drilling phase on as and when required. The procedure and time required be mentioned specifically as this will be the key technical criteria. Moreover, the department has the prerogative to check / inspect the base / lab facilities at any time as & when required.
5. Bidder will have to submit the proof of satisfactory track record for provision of Mud Engineering Services along with Mud chemicals during recent past 10 years. The bidder will provide complete details of mud systems, experience of working with different mud systems, and mud chemicals supplied on consignment basis to other E & P companies be submitted along with bid as per Mandatory requirement. In case of confidentiality of the data, submit front page of the Contracts as proof.
6. For reference purpose only, the bidder will provide the addresses and contact numbers (other than OGDCL) of the clients to whom they have provided services during the recent past 10 years. The responsibility for verification of such contact details rests with the bidder.

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7. Each bidder will submit complete data documents such as Technical Specification sheets & MSDS for each of their proposed mud chemicals as per technical specifications mentioned at Section-H or as per industry prevailing practices.
8. Each bidder will submit QA/QC certificate / Certificate of Analysis (CoA) from an internationally reputable laboratory or from the original manufacturer for each of their proposed Mud chemicals. These CoA may be used to establish baseline for future reference.
9. All the bidders must have to submit minimum 1kg / 1Litre free sample, of quality as desired by OGDCL, of the following fifteen (15) no. of mud chemicals consisting of ten (10) Water Base Mud Chemicals and five (5) Oil Base Mud Chemicals. The samples can be submitted within fourteen (14) days after technical bid opening, if not submitted along with bid. No sample will be accepted / entertained after such period of Technical Bid Opening, and the bid will be rejected. However, the valid receipt / tracking details supplied through national / international courier services must necessarily be attached with the technical bid otherwise the bid will be rejected. Moreover, all the samples would be in sole custody of OGDCL and lab analysis of these samples would be undertaken at OGDCL own lab duly witnessed by bidder's team. However, in case of contention of results, OGDCL may opt to analyze these chemicals in 3rd party laboratory / bidder's laboratory duly witnessed by OGDCL team (all the arrangement would be done by Bidder). If more than 03 submitted samples of Water Base Mud Chemicals and all 5 samples of Oil Base Mud Package are found non-conforming to technical specification of tender document, the bidder will be disqualified for further evaluation. Furthermore, the acceptance of lab results will be binding over the bidders and the bidder cannot challenge the results of its competitor bidder's samples.

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|------|----------------------------------|------|------------------------------|
| 9.1 | API Bentonite (Treated) | 9.2 | Shale Stabilizer |
| 9.3 | Spotting Chemical | 9.4 | Potassium Chloride (KCl) |
| 9.5 | PAC-R | 9.6 | PAC-LV |
| 9.7 | KLS | 9.8 | KL |
| 9.9 | Xanthan Gum | 9.10 | Synergistic Polymer |
| 9.11 | Oil Base Mud Gel | 9.12 | Primary Emulsifier for OBM |
| 9.13 | Wetting agent for OBM | 9.14 | Secondary Emulsifier for OBM |
| 9.15 | Filtration Control Agent for OBM | | |

10. The bidder(s) qualifying mandatory requirement and obtaining qualifying points in each clause of Technical Evaluation Points Table will be declared Technically Responsive and will be considered for further techno-commercial evaluation for the final contract award subject to fulfilling all other terms and conditions/instruction to the bidders as per all Enclosures.
11. Bidders are required to mention the unit price and total cost of all the mud chemicals separately given in Financial Bid Format, exactly as per Units used for costing of mud chemicals given in Financial Bid Format. In case of any discrepancy in calculations, OGDCL reserves the right to select the lowest price option.

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12. Bidders should mention the following in their bid that:
- (i) Technical specifications of the offered mud chemicals, conform to the specifications mentioned at section-H, **each bidder should fill-in the given tables with the exact value of these properties of their quoted product. Only to write conforming to or O.K. will not be sufficient.**
 - (ii) Country of origin and shelf life of each quoted chemical.
 - (iii) Brand names of their products against each chemical
 - (iv) Dosage range of their products which may be used to establish baseline for future reference.
13. Bidder should quote premium products. OGDCL will only accept Premium Products. Bidder must submit relevant document showing that it is premium. However, OGDCL can ask for another product if sufficient evidence is not provided during technical evaluation. OGDCL will have the final say in deciding that product is premium.
14. The quantities of all Mud Chemicals as well as no. of days in Financial Bid Format at Section-J are estimated and for financial evaluation purpose only However the quantities required during execution of contract period may depends upon the actual requirement of OGDCL.
15. The consumption of mud chemicals will be dependent upon the requirement. OGDCL ex-stock chemicals including contingency material, if available at Rig site may be utilized first.
16. All the mud chemicals will be charged on actual consumption basis and the contractor will maintain sufficient stock of mud chemicals at well site and its yard.
17. Payment will be made for the material actually consumed after verification of invoices from Operation Manager/ Company Man / Mud Engineer and Well Services Department of the purchaser (OGDCL). The invoices must be accompanied with all supporting documents including details of consignments of each chemical.
18. Four qualified mud engineers will be assigned for the entire duration of the well on rotational basis i.e. two mud engineers will be present on the Rig at all times and will be responsible for 24 hours' operations, one Senior/Lead mud engineer and second Night mud engineer. The day rate of the Night Mud Engineer must also be quoted in the financial bid.
19. The Senior/ Lead Mud Engineer who will render the services at field during day time should be at least Master in Science in Geology, Chemistry or Graduate Engineer with minimum 6 years' experience or in case of Intermediate / High school with 20 years relevant working experience at field and not exceeding to 60 years of age. C.V's of proposed Mud Engineers be enclosed with the technical bid. Lead engineer must have completed Mud school to qualify for working at OGDCL well site.

20. The night Mud Engineer who will render the services at field during night should be at least Master in Science in Geology, Chemistry or Graduate Engineer with minimum 3 years' experience or in case of Intermediate / High school with 15 years relevant working experience at field and not exceeding to 55 years of age. C.V's of proposed Mud Engineers be enclosed with the technical bid.
21. Mud Engineering Service Charges per day for both mud engineers to be quoted in the bid.
22. Mobilization/ demobilization of personnel and mud testing equipment will be on contractor's account. OGDCL will not provide transport to Engineers from nearest airport to & from well site, whereas it will be the sole responsibility of the contractor in accordance with laid down procedure of the company and / or Govt. of Pakistan i.e., security clearance / valid work visa, pick & drop etc. OGDCL will provide boarding and lodging for contractor's personnel at rig site.
23. Bidder should submit CVs of at least 10 designated Senior/Lead Mud Engineers and 05 designated Night Mud Engineers with the Technical proposal for provision of Mud Engineering Services. Lead Engineer Mud School certificates need to be furnished. In case of any changes to Bidder's personnel following award of the work, the change will be allowed only with consent of OGDCL.
24. Proposed Mud Engineers should be fluent in spoken and written English with adequate experience in Pakistan (Preferably). In case of Mud Engineer of any non-English language origin, documentary evidence proving that the proposed mud engineers have undertaken English language course from a reputed/ recognized institution. It will be mandatory to submit the certificates with the CVs of proposed mud engineers.
25. Designated engineers can be Permanent/Contractual employees of the Bidder.
26. Bidder to confirm its in-house "Employee Competency and Training System". Training Matrix to be submitted as part of verification process.
27. The contractor will ensure the well site stay of their assigned mud engineer on 28/28 or 28/14 days rotation basis. No over stay will be allowed after 28 days, however the relaxation may be granted in case of operational exigency.
28. Designated mud engineers should have more than 06 years on-hand recent experience with competency in running solids tolerant inhibited water base mud systems (Lignosulphonate / Lignite type, High Performance Water Base mud system, Non-disperse fresh water KCL/GLYCOL/PHPA, Silicate, Sodium / Potassium Formate) and Oil Base Mud (OBM) System. The designated engineer must have the ability to prepare / run any type of high performance mud systems, drill-in fluids, non-damaging to reservoir as per program or other than program if needed according to some exigent situation. Designated mud engineer should be capable of running all types of brine.

completion fluids. He should have high competence in dealing with low/high pressures (loss/gain) and well control problems and knowledge of SCE.

29. All professionals designated for field duty should have adequate H₂S and Drilling Fluid training. All required PPE and safety equipment for personnel will be provided by the contractor.
30. Before sending any Mud Engineers to Rig Site, OGDCL's consent will be mandatory. OGDCL reserves the right to reject any proposed personnel based upon competency or experience.
31. Contractor should provide technical back-up support on quality control, quality assurance of material and solution based proposals. The contractor should have a senior mud engineer/consultant stationed in Pakistan, at no additional cost to OGDCL, having Global Drilling Fluids Engineering experience of minimum 20 years with different mud systems in Pakistan (with minimum 5 years as technical specialist/ expert) and will be assigned as Technical coordinator for meeting with relevant OGDCL personnel at Islamabad Head office for technical support and to get the requirement of chemicals on monthly basis and to arrange inventory as per need analysis. Minimum 01 No. CV of consultant should also be enclosed with the technical bid. OGDCL reserves the right to reject any proposed personnel based upon competency or experience.
32. Contractor's Engineer at site will have to submit daily detailed API mud report together with weekly / monthly mud and inventory reports, phase reports and well completion reports etc.
33. The Contractor should have necessary Mud Engineering & Hydraulics support software's data, with minimum modules for Hydraulics, Hole Cleaning, ECD, Fluid Temperature simulations and loss circulation control design, having one copy/product certificate with field engineer.
34. Service Company should ensure provision of all safety equipment for lab and field use, essential Mud Testing Equipment, chemical reagents and glassware, etc. at well site for maintaining excellent mud parameters (OGDCL will not be responsible to provide the same). List of such material is to be submitted along with the bid. Standard test kit will be included in per day rate of Mud Engineer.
35. The Service Company should ensure judicious use of chemicals by its Mud Engineer working at Rig site. The same would also be monitored by Well Services Department of OGDCL, similarly the invoices would be verified accordingly and amount would be paid for justified usage only.
36. The contractor is bound to submit separate invoices for Mud Chemicals & Mud Engineering Services.
37. OGDCL has the prerogative to either acquire both Mud Engineering services and Mud Chemicals from Service Company or place its own Mud Engineer, whereas, the Service Company will only provide Mud Chemicals and vice versa, subject to OGDCL's requirement at any well.

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38. The contractor is bound to provide firm schedule of procurement (import / shipment) of Mud chemicals and their availability at site (if required by OGDCL).
39. The contractor is bound to provide the material in its required physical state (solid/liquid) given in Financial Bid Format.
40. The required / recommended dosage of each chemical should be according to its grade & composition as dictated by hole conditions.
41. The Contractor will be responsible for damages & wastages of its mud chemicals, if any, at contractor's expense, during drilling operations. Contractor will be responsible for disposal of solid waste generated at well-site due to consumption of Mud Chemicals which may comprise of empty bags of all sizes / types, cans, drums etc. at no cost to OGDCL.
42. Beside the conventional testing equipment, HPHT Filter Press, 6-8 speeds/ variable speed Rheometer, MBT kit, Pilot test kit, Digital pH meter, Garret gas train with complete array of Dragger's tubes or any other equipment required for testing of fluid, will also be provided as per requirement of OGDCL at no extra cost.
43. The Contractor will also confirm to arrange special mud tests mentioned at Section-F of their high performance mud chemicals on actual shale cuttings as per requirement of OGDCL from Analytical mud laboratory abroad at no extra cost to OGDCL. Effective R&D (Research & Development) services to be provided by the Contractor at no cost to OGDCL.
44. Contractor shall provide training on advanced Mud School and specialized laboratory equipment to Company's fifteen to twenty (15-20) Professionals once every year during the tenure of the Contract. The minimum duration of the course shall be 01 week. Contractor shall bear all training, boarding, lodging and traveling expenses of his instructor and training to be conducted in Pakistan. OGDCL will bear the expenses for its own personnel lodging, boarding and traveling for attending such training. Due to COVID-19 situation, this training can be conducted virtually, in case if it will not be possible for the instructor to travel to Pakistan.
45. The contractor will be responsible for visit of two OGDCL professionals per year to its Factory and Analytical laboratory abroad to physical witness the specialized testing of high performance Mud Chemicals. The expenditure incurred would be borne by OGDCL. This is subject to no restrictions on travel due to Covid-19.
46. All mud chemicals should be palletized and wrapped for protection against weather implications like rain, moisture, sunlight, and handling damages. Contractor will also be responsible for providing tarpaulin covers etc. to prevent damage of their mud chemicals.

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47. For easy product identification, each pallet/drum/sack should be clearly labeled on 4 sides with stickers indicating weight and total quantity of the product.
48. Mobilization / Transportation of mud chemicals and demobilization of left over mud material will be on contractor's account. OGDCL will arrange off loading and handling of mud chemicals at site. However, OGDCL will not be responsible for damages/ wastages and deterioration of contractor's mud chemicals for any reasons (i.e. handling, loading and off-loading) during drilling operations. Moreover, no chemical would be demobilized from well site without prior intimation to OGDCL.
49. Only those mud chemicals will be stored at well site in sufficient quantities which are required as per mud programs. No other chemical will be stored at well site without approval of OGDCL. OGDCL Location will not be used, in any case, as transit location of the contractor.
50. OGDCL has the right to get sample of any Mud Chemical along with its Consignment no. or the sample of Mud from any Rig Site where contractor is providing services and get tested from OGDCL lab or any recognized lab in Pakistan at any time without witnessing of Contractor's representative or prior notice and information to the Contractor.
51. Mud chemicals should be of A-One grade and should fully comply with API specification where applicable and attached technical specifications at section "H". During the whole contract period if any material/chemical found to be Sub-standard then it will be deducted/charged at zero rate, being consumed at all OGDCL locations against that consignment, without assigning any explanation. The contractor will be informed about the incident and consignment of that chemical must be lifted back by the contractor and should be replaced with material conforming to OGDCL required technical specifications immediately.
52. The Useful Life or Shelf Life of all the Mud Chemicals, provided by the contractor during the contract period, should be beyond the contract period.
53. The Shelf Life of each mud chemical shall be shared with OGDCL before mobilization. The products will not be acceptable if; the products are expired before mobilization or if the expiry date is within the timeframe of expected utilization at a particular well.
54. The contractor shall be responsible for quality inspection of imported and local mud chemical and the Lab Reports/ Certificate of Analysis will be shared to OGDCL, Head Office, before mobilizing each new lot / consignment of chemicals at OGDCL Rigsite. The contractor is also responsible to provide the consignment details to Field Mud Engineer along with that chemical.
55. Spacious warehouse and sizeable inventory/ stock of mud chemicals/ Equipment /Mud Lab facilities at their base in Pakistan to be maintained all the time during contract period to cater the requirement of 6-8 wells simultaneously.

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56. Contractor must share the inventory of mud chemicals and mud lab reagents once in month or whenever required by the company with following information, but not limited to, a. Chemical/Item Name b. Quantity c. Batch/consignment Number d. Country of origin e. Manufacturing Date f. Expiry Date g. Shelf Life h. quality inspection certificate i. Other.
57. The contractor will submit one hard copy and one soft copy for detailed phase/well reports within two weeks of completion of each phase/ well as per OGDCL requirement, containing complete mud data, tables, charts, and their analysis along with conclusion / recommendations. These reports to comprise of complete Data Analysis of mud related hole problems encountered in detail (of each section drilled), steps taken to resolve the problem and recommendations for future wells on the basis of lessons learnt to mitigate / avoid (if possible) these problems. The data analysis section is to be attached separately with mud re-cap.
58. Required material will be imported by the contractor at his own on consignment basis & Import/ Export custom clearance, custom duties or any other cost of the contractor material/equipment will be at contractor's account
59. Import/ Export custom clearance permits for contractor's equipment / chemicals shall be obtained by the contractor at contractor's expense. OGDCL will extend its co-operation by dispersing Import Authorization Letter. In this regard contractor will ensure that the material/equipment explicitly imported & utilized exclusively for OGDCL's drilling operations as per operational requirement at wells.
60. All the contractor's personnel must abide by & conform to company's HSEQ policy & any periodic changes, in true letter & spirit.
61. To ensure implementation of all HSE & QA/QC requirements, regular visits of Contractor's HSE Coordinator & Technical Coordinator to well-site shall be mandatory.
62. OGDCL reserves the right to make any amendment in tender documents at any stage before technical bid submission.
63. In the event the Contractor (after the award of contract) is unable to mobilize the Mud Chemicals & Engineering Services as per the contract during the contract period after serving mobilization notice or denial of providing services by the Contractor or service quality issues then the Company, without further notice or judicial proceedings and without prejudice to any other rights and remedies, shall procure the Mud Chemicals through direct indenting and will charge back the difference in cost to the Contractor.
64. If any of the information provided by the bidders proves wrong or any counterfeited/unlawful/fake/forged document is submitted to mislead the company, OGDCL reserves the right to disqualify such bids without further assigning any reason and may initiate proceedings against bidder.

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65. The de-barred / black listed firms are not eligible to apply. However, after completion of debarred time period, formal approval / NOC from OGDCL management must be acquired before submission of bid and copy of letter must be enclosed in the bid.
66. Due to conflict of interest the service company providing Drilling Fluid Waste Management Services to OGDCL, will not be entertained for Drilling Fluid Services.
67. Bid price for Mud chemicals shall be firm and inclusive of all applicable taxes and levies as per Government of Pakistan regulations excluding Provincial Sales Tax / ICT on services or GST on local goods only. Provincial Sales Tax/ ICT on services or GST on local goods, if applicable will be paid by OGDCL.
68. Compliance/Acceptance of all terms & conditions of the Bid documents is compulsory. Only those exceptions/deviations from the tender documents will be considered that carry special conditions.

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SECTION- C

OGDCL has planned to drill number of exploratory & development wells in North, Center & South region of Pakistan. Tentative well Plan for a typical representative well in all these regions are as follow.

TENTATIVE DEPTHS, VOLUMES, TYPES OF DRILLING FLUIDS AND PARAMETERS REQUIRED FOR REPRESENTATIVE WELLS IN NORTH, CENTER & SOUTH REGIONS FOR REFERENCE ONLY I.E. DEPTHS/ MUD SYSTEMS/MUD VOLUMES/ MUD PARAMETERS/ CASING POLICIES/NO. OF CASINGS/CASING SIZES MAY CHANGE AS PER DESIGN OF ANY SPECIFIC WELL IN REGION.

(NORTH REGION)

Phase No.	Hole Size (Inch)	Interval (M)	CSG Size (Inch)	WBM		OBM/SBM	
				Fluid Type	Tentative mud Parameters range	Oil Base Mud	Tentative mud Parameters range
I	28"	0 - 400M	24- 1/2"	Spud Mud	SG 1.04 - 1.20 F/Vis: 70-80 pH: 9.0-10	NIL	
II	22"	400- 1230 M	18- 5/8"	KLS-KL Mud/ High Performance Mud System	SG 1.20 – 1.45 F/Vis:65-70 pH: 9.0-10 PV:18-24 YP:28-30 GEL:8-9/18-20 W/L(cc): < 5.0 Cake (mm): 1.0 Solids:12-19 Sand: Traces	Oil Base Mud	SG 1.20 – 1.45 Oil/water ratio: 80/20 to 85/15 6rpm: >12 HPHT F/L (cc)/ 30min at 190°F: <3.0 Water phase salinity: >160 g/l Cl ⁻ Electrical stability: >800 volts
II	17"	1230- 2560M	13-3/8"	KLS-KL Mud / Salt Saturated Mud/ High Performance Mud System	SG 1.45 –1.70 F/Vis:60-65 pH: 9.0-10 PV:24-31 YP:25-30 GEL:5-8/15-18 W/L(cc): < 5.0 Cake (mm): 1.0 Solids:19-26 Sand: Traces	Oil Base Mud	SG 1.45 – 1.70 Oil/water ratio: 80/20 to 85/15 6rpm: >12 HPHT F/L (cc)/ 30min at 190°F: <3.0 Water phase salinity: >160 g/l Cl ⁻ Electrical stability: >800 volts
III	12-1/4"	2560- 4650M	9-5/8"	KLS-KL Mud/ High Performance Mud System	SG 1.70-1.95 F/Vis: 55-60 pH: 9.0-10 PV:31-37 YP:20-25 GEL:6-7/18-21 W/L(cc): < 5.0 Cake (mm): 1.0 Solids:26-33 Sand: Traces	Oil Base Mud	SG 1.95 – 2.05 Oil/water ratio: 80/20 to 85/15 6rpm: >10 HPHT F/L (cc) at 190°F: <3.0 Water phase salinity: >160 g/l Cl ⁻ Electrical stability: >800 volts
IV	8-1/2"	4650- 5412M	7" Liner	KCl / NDF/ High Performance Mud System / Sodium Formate / Potassium Formate	SG 1.10-1.20 F/Vis:50-55 pH: 9.0-10 PV:16-18 YP:15-20 GEL:4-5/12-15 W/L(cc): < 5.0 Cake (mm): 1.0 Solids:6-12	NIL	
	Completion	-	-	CaCl ₂ /CaBr ₂ Zinc Bromide	SG 1.40-2.30	NIL	

Note: consider 6" /5-7/8" hole with same specs as 8 1/2" hole section

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(CENTER REGION)

Phase No.	Hole Size (Inch)	Interval	Csg Size (Inch)	WBM		OBM/ SBM	
				Fluid Type	Tentative mud parameters range	Oil Base Mud	Tentative mud parameters range
I	28"	0-410	24 1/2"	Spud Mud/ Air Drilling	SG 1.04-1.10 F/Vis: 70-80 Ph:8.5-9.0	NIL	
II	22"	410-910	18 5/8"	KCl-PHPA Polymer / Glycol Mud System/ High Performance Mud System	SG 1.10-1.25 F/Vis:60-70 pH: 9.0-10 PV:16-19 YP:28-30 GEL:7-8/18-21 W/L(cc): <8.0 Cake (mm): 1 Solids:6-14 Glycol (v/v)3% KCl> 15PPB MBT: 15-20 PPB	Oil Base Mud	SG 1.10 – 1.25 Oil/water ratio: 75/25 to 85/15 6rpm: >8 HPHT W/L (cc) at 190°F: <3.0 Water phase salinity: >160 g/1 Cl- Electrical stability: >800 volts
III	17"	910-1745	13-3/8"	KCl / NDF/Sodium Formate / Potassium Formate / Under Balance Drilling (UBD)	SG 1.04-1.15 F/Vis:60-65 pH: 9.0-10 PV:14-17 YP:25-30 GEL:6-7/18-20 W/L(cc): <8.0 Cake (mm): 1 Solids:4-9 KCl> 15PPB MBT: 15-20 PPB	NIL	
IV	12-1/4"	1745-3150	9-5/8"	KCl / NDF/Sodium Formate / Potassium Formate / Under Balance Drilling (UBD)	SG 1.06-1.20 F/Vis:55-60 pH: 9.0-10 PV:14-18 YP:20-25 GEL:5-6/12-15 W/L(cc): <6.0 Cake (mm): 1 Solids:4-12 KCl> 15PPB MBT: 15-20 PPB	NIL	
V	8-1/2"	3150-4100	7" Liner	KCl / NDF/Sodium Formate / Potassium Formate	SG 1.25-1.80 F/Vis:50-55 pH: 9.0-10 PV:19-33 YP:18-20 GEL:4-5/12-15 W/L(cc): < 5.0 Cake (mm): 1 Solids:14-29 KCl> 15PPB MBT: 15-20 PPB	NIL	
VI	5-7/8" or 6"	4100 - 4900	5" Liner	KCl / NDF/Sodium Formate / Potassium Formate	SG 1.30-1.60 F/Vis:45-50 pH: 9.0-10 PV:21-28 YP:15-20 GEL:3-5/9-15 W/L(cc): < 5.0 Cake (mm): 1 Solids:15-23 KCl> 15PPB MBT: 15-20 PPB	NIL	
	Completion	-	-	KCl/ NaCl/ CaCl ₂ Brine/ CaBr ₂ / Zinc Bromide	SG 1.05-1.30	NIL	

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(SOUTH REGION)

Phase No.	Hole Size (Inch)	Interval (M)	Csg. Size (Inch)	WBM		OBM/ SBM	
				Fluid Type	Tentative mud parameters range	Oil Base Mud	Tentative mud parameters range
I	26"	0- 300	20"	Bentonite Spud Mud	SG 1.05-1.10 F/Vis: 70-80 pH: 8.5-9.0	NIL	
II	17-1/2"	300-1390	13-3/8"	KCl-PHPA with Glycol or Silicate Mud System/ High Performance Mud System	SG 1.10-1.20 F/Vis:60-70 pH: 9.0-10 PV:16-18 YP:20-25 GEL:8-9/18-20 W/L(cc): < 5.0 Cake (mm): 1 Solids:6-12 Glycol (v/v)3% KCl> 15PPB MBT: 15-20 PPB	Oil Base Mud SG 1.10 – 1.20 Oil/water ratio: 75/25 to 85/15 6rpm: >8 HPHT W/L (cc) at 190°F: <3.0 Water phase salinity: >160 g/1 Cl- Electrical stability: >800 volts	
II	12-1/4"	1390 - 3000	9-5/8"	KCl-PHPA with Glycol or Silicate Mud System/ High Performance Mud System	SG 1.20-1.25 F/Vis:55-60 pH: 9.0-10 PV:18-19 YP:18-20 GEL:6-7/15-18 W/L(cc): < 5.0 Cake (mm): 1 Solids:12-14 Glycol (v/v)3% KCl> 15PPB MBT: 15-20 PPB	Oil Base Mud SG 1.20 – 1.25 Oil/water ratio: 75/25 to 85/15 6rpm: >8 HPHT W/L (cc) at 190°F: <3.0 Water phase salinity: >160 g/1 Cl- Electrical stability: >800 volts	
III	8-1/2"	3000 - 3740	7" Liner	KCl / NDF/ Sodium Formate / Potassium Formate	SG 1.20-1.30 F/Vis:50-55 pH: 9.0-10 PV:18-21 YP:20-22 GEL:4-5/12-15 W/L(cc): < 5.0 Cake (mm): 1 Solids:12-15 KCl> 15PPB MBT: 15-20	NIL	
IV	Completion	-	-	KCl/ NaCl/ CaCl ₂ Brine/ CaBr ₂ / Zinc Bromide	SG 1.10-1.25	NIL	

Note: consider 6" /5-7/8" hole with same specs as 8 1/2" hole section

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SECTION-D

**TENTATIVE MEASURED INTERVALS FOR REPRESENTATIVE WELLS IN
NORTH, CENTER & SOUTH REGIONS FOR REFERENCE ONLY I.E. INTERVALS/
FORMATIONS/LITHOLOGY MAY CHANGE AS PER DESIGN OF ANY SPECIFIC
WELL IN THE**

(NORTH REGION)

IT INCLUDES FOLLOWING BUT NOT LIMITED TO THESE CONCESSIONS I-E, NASHPA; MELA; KOHAT; GURGALOT; DAKHINI; SOGHRI; FIMKASAR; CHAKNAURANG; KAL AND MIANWALI ETC.

Sr. No.	Formation	Interval MD (m)	Lithology
1	KAMLIAL	0-330	Sandstone, Clay/Claystone & Silt Stone
2	MURREE	i- 330-1000 ii- 1900-2250 iii- 3130-4130	Sandstone and Clay/Claystone
3	KOHAT	i- 1000-1100 ii- 2250-2310 iii- 4130-4200	Limestone, Marl and Shale
4	KULDANA	i- 1100-1230 ii- 1850-1900 iii- 2310-2560 iv- 4200-4325	Clay / Claystone
5	EOCENE EVAPORITE	i- 1230-1850 ii- 2560-3130	Gypsum, Shale and Salt
6	JATTA GYPSUM	4325-4525	Gypsum
7	PANOBA/PATALA	4525-4650	Shale, Limestone and Marl.
8	LOCKHART	4650-4927	Limestone with thin streaks of Shale and Marl
9	HANGU	4927-4947	Sandstone, shale and Marl
10	LUMSHIWAL	4947-4978	Sandstone
11	CHICHALI	4978-5026	Siltstone and Shale
12	SUMANASUK	5026-5066	Limestone with streaks of Marl
13	SHINWARI	5066-5182	Sandstone, Clay/Claystone, Shale and streaks of Limestone and Marl
14	DATTA	5182-5412	Sandstone with streaks of Shale and Clay/Claystone

(CENTER REGION)

IT INCLUDES FOLLOWING BUT NOT LIMITED TO THESE CONCESSIONS I-E, PIKOH; UCH; LOTI; ZIN; DHODAK; BAHU; MARI AND QADIRPUR ETC

Sr. No.	Formation	Interval MD (m)	Lithology
1	PIRKOH	0 - 110	Limestone
2	SIRKI	110-165	Shale and Clay/ Claystone
3	HABIB RAHI LST.	165-410	Limestone and Marl
4	GHAZI SHALE	410-910	Shale, Marl and Limestone
5	SUI MAIN LIMESTONE	910-1435	Limestone

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6	DUNGHAN	1435-1650	Limestone, Shale, Marl and sandstone
7	UPPER RANI KOT	1650-1745	Shale and Limestone
8	LOWER RANI KOT	1745-1815	Sandstone, Shale and Limestone
9	PAB SANDSTONE	1815-2065	Sandstone, Shale and Clay/Claystone
10	FORT MUNRO	2065-2160	Limestone and Shale
11	MUGHAL KOT	2160-2210	Sandstone and Shale
12	PARH	2210-2450	Limestone
13	UPPER GORU	2450-2940	Limestone
14	LOWER GORU	2940-3145	Limestone and Marl
15	SEMBAR	3145-4100	Shale, Sandstone and Siltstone
16	CHILTAN	4100-4700	Limestone

(SOUTH REGION)

IT INCLUDES FOLLOWING BUT NOT LIMITED TO THESE CONCESSIONS I-E, KUNNER; PASAHKI; SINJHORO; TANDO ALLAH YAR; TANDO ALAM; GUDDU; THAL; THORA; LASHARI; BITRISIM; SARA ; KHEWARI; TEGANI AND NIM ETC.

Sr. No.	Formation	MD (m)	Lithology
1	POST EOCENE	0-495	Sandstone, Clay/Claystone & Conglomerate
2	KIRTHEER	495-855	Limestone, Shale & Marl
3	LAKI	855-1280	Limestone, Marl & Shale
4	SML	1280-1390	Limestone, Marl & Shale
5	RANI KOT	1390 - 2300	Sandstone, Shale, Clay/Claystone and Limestone
6	UPPER GORU	2300 - 2610	Marl and Shale
7	LOWER GORU SHALE UNIT	2610-3147	Shale, Siltstone, Marl & Sandstone
8	BASAL SAND	3147-3187	Sandstone and Shale
9	TALHAR SHALE	3187-3262	Shale
10	MASSIVE SAND	3262-3722	Sandstone and Shale
11	SEMBAR	3722-3740	Shale

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SECTION - E**MINIMUM STOCK LEVEL OF LAB EQUIPMENT / REAGENT / GLASS WARE TO BE MAINTAINED DURING DRILLING FOR EACH RIG/ WELL SITE**

It is to be ensured that Mud Lab at Rig site should have the following Equipment in fully working condition as well as the availability of necessary glass ware & Reagents:

S#	Description	Quantity
1.	VG meter (Rheometer)110 / 220 volts	1
2.	Mud Balance	1
3.	Pressurized Mud Balance	1
4.	Marsh Funnel with Cup	1
5.	API Filter press	1
6.	Garret gas Train complete	1
7.	HPHT Filter press	1
8.	CO ₂ Cartridge (01 dozen pack)	5
9.	Stop Watch & Timer	1 each
10.	Retort Kit	1
11.	Sand Testing Kit	1
12.	Centrifuge, Hand Held	1
13.	Digital Weighing Scale for field test 0.5 g to 1 Kg	1
14.	Hot Plate	1
15.	Hamilton Beach Mixer	1
16.	pH Meter	1
17.	pH Paper 1-14 (100 strips pack)	5
18.	MBT Kit (complete)	1
19.	Thermo Cup	1
20.	Electrical voltage transformers 220v-110v & 220v-12v	1 each
21.	Potassium Ion Test Kit	1
22.	Sodium Silicate Test Kit	1
23.	Phenolphthalein Indicator	100 ml
24.	Potassium Chromate Indicator	100 ml
25.	Hardness Buffer Solution	150 ml
26.	Hardness Indicator	100 ml
27.	Methyl Orange or Brom Cresol green	100 ml
28.	Sulphuric Acid (N/50)	1000 ml
29.	Silver Nitrate (0.282 N)	500 ml
30.	Silver Nitrate (0.0282 N)	1000 ml
31.	Standard Versanate Solution (EDTA) (0.01 M)	500 ml
32.	Standard Versanate Solution (EDTA) (0.1 M)	500 ml
33.	Sufficient Glass-ware to conduct required tests.	

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SPECIAL TESTS OF MUD CHEMICALS

Type of Test	Test Conditions	
Liner Swell Meter Testing	This test is done to show the swelling tendencies of the shale in a specific fluid. This will be done on actual field shale. This shall be done for an extended period of time until the curve becomes entirely flat to be able to determine the maximum swelling tendency of the shale. Test should be run until the swelling completely stops and linear line is achieved with the lowest swelling possible achieved.	
Capillary Suction Time	This test is to compare the effects of aqueous fluids on the tendency for clay swelling and/or dispersion. CST is used to determine if a protective fluid is needed for the formation. This test shall be done initially on various KCl (1,3,5,7,9%) concentrations to determine the optimum KCl brine to use for the fluid. It shall also be done on different brine mixtures as well as the addition of Inhibitors in the brines to determine the shale inhibition effects of the brines.	
Shale Erosion	This test shall be done on the actual shale sample. Shale Integrity should be kept above 90%	
X-Ray Diffraction	This test shall be done on the actual shale sample to determine the shale composition and how to properly inhibit and encapsulate the shale.	
MBT: Cation Exchange Capacity	This test is done to estimate the cation exchange capacity of the drilling fluid solids and clays.	
Accretion Testing	Accretion testing shall be done on the actual shale to show the effect of the encapsulators in this test. Accretion should be below 10%.	
Slake Durability	This test shall be done on the actual shale if not available, then London clay shall be used to show the effect of the encapsulators in this test. It should be above 90%	
Permeability Plugging Apparatus (PPA) For LCM	Test Media	Test Conditions
	Slotted discs size up to 2500 microns#	Desired temperature and differential pressure up to 2000 psi
	Slotted discs size up to 2500 microns#, and 6000 micron vug insert	Room temperature, 1000 psi differential pressure
	Slotted discs size up to 3000 microns#,	Room temperature, 4000 psi differential pressure
	Vug inserts up to 40,000 microns (40mm)	Room temperature, 4000 psi differential pressure

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TECHNICAL SPECIFICATIONS OF MUD CHEMICALS**1. API BENTONITE (NON-TREATED)**

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS API - 13A SECTION-5	EXACT VALUE OF THE OFFERED PRODUCT
01.	Yield Point/ Plastic Viscosity Ratio	1.5 Maximum	
02.	Dispersed plastic viscosity	10 CP, Minimum	
03.	Dispersed filtrate volume	12.5 cm ³ , Maximum	

2. API BENTONITE (TREATED)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS API - 13A SECTION-5	EXACT VALUE OF THE OFFERED PRODUCT
01.	Viscometer Dial reading at 600 r/min	30 Minimum	
02.	Yield Point/ Plastic Viscosity Ratio	3 Maximum	
03.	Filtrate volume	15.0 ml Maximum	
04.	Residue of Diameter greater than 75µm	4.0 % mass fraction, Maximum	

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3. SODIUM CARBOXY METHYL CELLULOSE
LOW VISCOSITY GRADE (CMC-LV)

A)

SR.N O.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Light colored hygroscopic free flowing powder	
02.	Moisture content ASTM D 1439	8% Maximum	
3.	Bulk Density (g / L)	650 Minimum	

B) PERFORMANCE EVALUATION

PERFORMANCE TESTING (AS PER API SPECIFICATION 13-A, SECTION 13)			
SR. NO.	PERFORMANCE TEST	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Presence of Starch or Starch derivatives	No	
2.	Viscometer dial reading at 600 RPM	90 Maximum	
3.	Filtrate volume	10 cm ³ Maximum	

4. SODIUM CARBOXY METHYL CELLULOSE
HIGH VISCOSITY (CMC-HV)

A)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Light colored hygroscopic free flowing powder	
02.	Moisture content ASTM D 1439	8% Maximum	
04.	pH of 1% Solution in distilled water (25 °C)	7 - 10	
06.	Bulk Density (g/l)	550 Minimum	

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B)

PERFORMANCE TESTING

(AS PER API SPECIFICATION 13-A, SECTION 14)

SR. NO.	PERFORMANCE TEST	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
	Presence of Starch or Starch derivatives	No	
1.	Viscometer Dial Reading at 600 rpm	In de-ionized Water	30 Minimum.
		40 g/L Salt solution	30 Minimum.
	API Spec. 13 A - 10	In Saturated Salt water	30 Minimum.
2.	Fluid Loss	10 cm ³ , Maximum	

5. POTASSIUM LIGNOSULPHONATE (KLS)

A)

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical state	Free flowing powder, free from dirt and any foreign material.	
02.	Solubility	5% solution in water (w/v) should not leave any residue.	
03.	Moisture Content	8% Maximum	
04.	pH of 5% Solution	3-6 Approx.	

B) **PERFORMANCE EVALUATION:**

SR. NO.	PERFORMANCE TESTS	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	a) Prepare 800 ml of 10% (w/v) of API treated bentonite suspension in distilled water by stirring for 30 minutes with laboratory stirrer and age for 48 hrs at 90±2°C. Treat this mud with 200ml of 20% (w/v) solution of lab grade Potassium Chloride (KCl) and stir for 30 minutes with laboratory stirrer and then age this suspension for 24hrs at 24±2 °C. Stir the		

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	<p>mud for 15 minutes with laboratory stirrer and raise its pH to 9.0-9.5 with 4N KOH solution and adjust its apparent viscosity in the range of 25-30cp by diluting with 4% KCl solution if required and also record yield point.</p> <p>b) Treat this mud with 1% (w/v) of the Potassium Lignosulphoate (KLS) and adjust pH in the range 10-10.5 with 4N KOH solution and stir for 10 minutes with Hamilton Beach Mixer at high speed and divide this mud into 02 parts. Record</p> <p>a) Apparent viscosity of 1st portion.</p> <p>b) Yield point of 1st portion.</p>	<p>Apparent viscosity should not exceed 50% of the value obtained for KCl base mud as at 1(a).</p> <p>Yield point should not exceed 25% of the value obtained for KCl base mud as at 1(a).</p>	
02.	<p>Hot roll the 2nd portion of KLS treated mud as at 1(b) at 160±2°C for 24hrs in a roller oven. Cool the mud to 24±2°C and stir for 10 minutes with a Hamilton Beach Mixer at high speed and record its</p> <p>a) Apparent viscosity</p> <p>b) Yield point.</p>	<p>Apparent viscosity should not exceed 50% of the value obtained for the KCl base mud as at 1(a).</p> <p>Yield point should not exceed 25% of the value obtained for the KCl base mud as at 1(a).</p>	

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6. CAUSTICIZED POTASSIUM LIGNITE (KL)

A)

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical appearance	Free flowing Powder	
02.	pH of 2% Solution	9.0 Minimum	
03.	Moisture Content	10 % Maximum	
04.	Particle size	90% minimum should pass through 30 mesh.	

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PERFORMANCE TEST:

SR. NO.	PERFORMANCE TESTS	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	<p><u>Preparation of base mud:</u></p> <p>Prepare 1000ml bentonite suspension containing 10.0 grams API bentonite per 100ml distilled water by stirring with laboratory stirrer (3000-4000 rpm) for 15 minutes. Age for 48hrs at 90±2°C temp. After aging, cool down to 24±2°C. Dilute it with distilled water if required to bring its apparent viscosity to 50±2cp after raising pH 9.0-10 with 5N KOH solution and also record its YP and API F/L. Divide this suspension into two portions.</p>		
02.	<p>Take one part (500ml) of base mud as mentioned at (01) and treat with 7.5 gm of potassium lignite sample with stirring. Stir for 15minutes with Hamilton beach mixer at high speed. Adjust the pH of this mud to 9.0-10 and record the following parameters;</p> <p>a) Apparent viscosity, (cp)</p> <p>b) YP (lbs/100sq.ft)</p>	<p>Should not exceed more than 50% of the value obtained for base mud at (01).</p> <p>Should not exceed more than 30% of the value obtained for base mud at (01).</p>	
03.	<p>Take 2nd part (500ml) of above base mud as mentioned at (01) and add 7.5 gm of potassium lignite sample with stirring. Stir for 15minutes with Hamilton beach mixer at high speed. Adjust the pH of this mud to 9.0-10. Hot roll at 140±2°C for 24hrs, cool down to 24±2°C and record the following parameters;</p> <p>a) Apparent viscosity, (cp)</p> <p>b) YP (lbs/100sq.ft)</p>	<p>Should not exceed more than 50% of the value obtained for base mud at (01)</p> <p>Should not exceed more than 30% of the value obtained for base mud at (01).</p>	

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7. SYNERGISTIC POLYMER
(A High Temperature Mud Conditioner)

A) TECHNICAL SPECIFICATIONS

SR. NO	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS (API SPECIFICATION 13-A, SECTION 5)	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical State	The material shall be in the form of free flowing powder, free from dirt and foreign matter	
02.	Moisture content, percent by mass	10 % (Maximum)	
03.	Water soluble content , percent by mass	90 % (Minimum)	
04.	Apparent viscosity of 2% (w/v) solution in distilled water at 24±2°C	3.0 cp (Maximum)	

B) PERFORMANCE TEST: -

SR NO	PERFORMANCE TESTS	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Performance Test in fresh water mud	<p>Prepare a base mud having apparent viscosity in the range 50 + 2.5 centipoises by dilution of prehydrated API bentonite with distilled water (The pre-hydrated bentonite is prepared by stirring 10% (w/v) bentonite with distilled water with a laboratory stirrer (5000-6000) rpm, for 30 minutes and aging the suspension at 90± 2°C for 24 hrs in a thermostatic water bath. Adjust its pH 9-10 with 5N-NaOH. Divide this base mud into two portions.</p> <p>i): - Roll a portion of the base mud in a high temperature aging cell, at 150± 2°C for 16 hrs in a roller oven cool to 24± 2°C and stir the rolled base mud for 15 minutes in Hamilton beach mixer at high speed and then determine its Apparent viscosity at 24± 2°C</p>	

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	<p>02. Apparent viscosity of treated mud (centipoises).</p> <p>HT-HP filtration loss (ml)</p> <p>Performance test in salt water mud</p>	<p>and HT-HP filtration loss at 150°C and 500 psi differential pressure</p> <p>ii): - Treat the second portion of the base mud with 2.0 % (w/v) additive and stir the suspension in a Hamilton beach miser at high speed for 10 minutes. Adjust the PH of the suspension in the range of 9.5-10.0 by adding 5N-NaOH solution (if necessary). Roll this mud, in a high temperature aging cell at 150± 2°C for 16 hrs in a roller oven. Cool to 24± 2°C and stir the resulting mud for 15 minutes in a Hamilton Beach mixer at high speed. Then determine its Apparent viscosity at 24± 2°C and HT-HP filtration loss at 150°C and 500 psi differential pressure.</p> <p>It should not be more than 60% of the value obtained for the rolled base mud.</p> <p>It should not be more than 60% of the value obtained for the rolled base mud.</p> <p>Prepare 8-10% (w/v) bentonite API suspension and allow it to hydrate fully by aging at 90± 2°C for 24 hrs ,so that the resulting mud ,when cooled to 24± 2°C and stirrer for 30 minutes with laboratory stirrer (5000-6000 rpm) has Apparent viscosity in the range 80± 5 centipoise .To this mud add 4% (w/v) sodium chloride (L.R grade) and stirrer for 30 minutes with a laboratory stirrer (5000-6000 rpm) and allow it to age at 24± 2°C for 24 hrs. Stir the aged mud for 15 minutes, determine its apparent viscosity and adjust it in the range 30± 2.5 by addition of 4% sodium chloride solution and also adjust its pH 9-10 by 5N-NaOH. Divide this base mud into two portions.</p> <p>i):- Roll a portion of this base mud in a high temperature ageing cell, at 150± 2°C in a roller oven for 16 hrs. Then cool and stir the</p>	
	<p>03.</p>		

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	<p>Apparent viscosity of treated mud (centipoises).</p> <p>HT-HP filtration loss(ml.)</p>	<p>rolled base mud and determine its Apparent viscosity at 24± 2°C and HT-HP filtration loss at 150 °C and 500 psi differential pressure.</p> <p>ii): - Treat another portion of the base mud with 2 % (w/v) of the additive by stirring in a Hamilton Beach Mixer at high speed for 10 minutes. Adjust the PH of the suspension in the range 9.5-10.0 by adding 5N-NaOH solution (if necessary). Roll this mud, filled in the high temperature aging cell at 150± 2°C for 16 hrs in a roller oven and stir the resulting mud for 10 minutes in a Hamilton Beach Mixer at high speed. Then determine its Apparent viscosity at 24± 2°C and HT-HP filtration loss at 150 °C and 500 psi differential pressure.</p> <p>Should not be more than 60% the value obtained for the rolled base mud.</p> <p>Should not be more than 60 % of the value obtained for the rolled base mud.</p>	
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8. SPOTTING CHEMICAL

A)

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical appearance	Free flowing Powder	
02.	Density	1.04 – 1.20 gm/cc	

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B) PERFORMANCE TEST:

SR. NO.	PERFORMANCE TESTS	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	<p><u>Lubricity Coefficient Test:</u></p> <p>Prepare a Bentonite suspension having Apparent Viscosity 10 CP, (prepared by dilution of API Bentonite, pre-hydrated for 72 hrs with Distilled water), treat the suspension with 1% (w/v) of the additive. Determine the lubricity coefficient of the treated suspension on a lubricity tester.</p>	It should not more than 0.25	
02.	<p><u>Filter Cake Cracking Test:</u></p> <p>Prepare a Bentonite suspension having Apparent Viscosity 15 cp by diluting pre-hydrating Bentonite (at 90±2°C for 72 hrs.) with distilled water. Obtain a Filter Cake of this mud in the API Filter Press by carrying out filtration for 30 minutes at 100 psi pressure using Whatman Filter paper No. 01. Throw the mud away, wash the mud cake with slow stream of water without removing the mud cake from the cell and fill the cell with 100 ml of HSD oil containing 2.5% w/v spotting fluid. Close the cell and apply 100 psi pressure for 2 hrs. Release pressure, throw out the HSD solution and observe cracking pattern on the mud cake.</p>	It should develop extensive cracks.	
03.	<p><u>Mud Cake Cracking Test:</u></p> <p>Prepare a Bentonite suspension having Apparent Viscosity 15 CP, by diluting pre-hydrating Bentonite (at 90±2°C for 72 hrs.) with distilled water and load it to S.G 1.20 with Barite. Obtain a Filter Cake of this mud in the API Filter loss apparatus by carrying out filtration for 30 minutes at 100 psi pressure (use Whatman Filter paper No. 01). Throw the mud away, wash the mud cake with slow stream of water without removing the mud cake from the cell and fill the cell with HSD oil containing 2.5% w/v spotting fluid. Apply 100 psi pressure after closing the cell and determine the time required for collection of 100 ml filtrate.</p>	The time required should not be more than 60 minutes.	

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**9. SHALE STABILIZER
(SODIUM ASPHALT SULFONATE)**

A)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Appearance	Black powder free from dirt and any foreign material	
2.	Density (g/ Cm ³)	1.25 – 1.50	
3.	Solubility (i) In Distilled water (ii) In Dimethyl Sulphoxide	65 % (Minimum) 30 % (Minimum)	
4.	pH of 2% (w/v) solution in distilled water at 24±2°C	8.5 (Minimum)	
5.	Moisture Content, percent by mass	10.0 (Maximum)	

B) **PERFORMANCE EVALUATION:**

SR. NO	PERFORMANCE TESTS	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01	Lubricity Test: Prepare a Bentonite suspension having Apparent Viscosity 15 cp, (prepared by dilution of API Bentonite, pre-hydrated @ 90±2 °C for 72 hrs) Treat the suspension with 2% (w/v) sample by stirring in Hamilton Beach Mixer at medium speed for 15 minutes. Determine the lubricity coefficient of the treated suspension on a lubricity tester.	It should not be more than 0.30.	
02.	Bentonite Inhibition Test: (a) Prepare a Bentonite suspension (blank) by stirring 7.5% (w/v) API Bentonite with distilled water in Hamilton Beach Mixer at high speed for 15 minutes. Determine its Apparent Viscosity and Yield point. (b) Add 3% (w/v) sulphonated Asphalt sample to distilled water and stir at high speed in Hamilton Beach Mixer for 10 minutes. To this add 7.5% (w/v) API Bentonite and stir again in Hamilton Beach Mixer at high speed for 15 minutes. Determine its Apparent Viscosity and Yield point.	Apparent Viscosity Should not be more than 35% of the value obtained for blank in 2(a) above. Yield point should not be more than 15% of the value obtained for blank in 2(a) above.	

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10. POTASSIUM CHLORIDE (KCl)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical state	White crystalline / granular powder free from visible impurities	
02.	Purity as KCl (on dry basis) % by mass	96 % Minimum	
03.	Moisture Content % by mass	2% Maximum	
04.	Matter insoluble in water % by mass	0.5% Maximum	
05.	Calcium Content as Ca ²⁺	500 ppm Maximum	

11. SODIUM FORMATE (HCOONa)

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Appearance	White crystalline powder	
2.	% Sodium Formate (HCOONa) (on dry basis)	96% Minimum	
3.	% Sodium Chloride (NaCl)	0.2 % Maximum	
4.	% Sodium Carbonate (Na ₂ CO ₃)	0.5% Maximum	
5.	% Sodium Hydroxide (NaOH)	1% Maximum	
6.	% of water (H ₂ O)	0.5% Maximum	
7.	% of iron (Fe)	5 ppm Maximum	
8.	Water insoluble content (%)	0.3% Maximum	

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12. POTASSIUM FORMATE (HCOOK)

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Appearance	White crystalline small flakes	
2.	% Potassium Formate (HCOOK) (on dry basis)	96% Minimum	
3.	% Potassium Chloride (KCl)	1 % Maximum	
4.	% Potassium Carbonate (K ₂ CO ₃)	2% Maximum	
5.	% Potassium Hydroxide (KOH)	1% Maximum	
6.	% of water (H ₂ O)	1 % Maximum	
7.	Water insoluble content (%)	0.3% Maximum	

13. MAGNESIUM OXIDE (MgO)

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Appearance	White free flowing powder	
2.	% Magnesium Oxide (MgO) (on dry basis)	90 % Minimum	
3.	% of Calcium Oxide (CaO)	1.05 % Maximum	
4.	% of Silica (SiO ₂)	3.50 % Maximum	
5.	% of Iron Oxide (Fe ₂ O ₃)	0.40% Maximum	
6.	% of Chloride (Cl)	0.03 % Maximum	
7.	% of Sulphite (SO ₃)	0.02 % Maximum	
8.	Loss on ignition (%)	4 % Maximum	
9.	Sieve analysis	100% should pass through 200 Mesh	

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14. POTASSIUM HYDROXIDE (KOH) FLAKES

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical state	The material should be in the form of flakes, free from dirt and foreign mater.	
02.	Purity as KOH, percent by mass.	90% Minimum	
03.	Carbonate (as K ₂ CO ₃), percent by mass.	1.0 Maximum	
04.	Sodium (as Na), percent by mass.	1.0 Maximum	
05.	Nitrate compounds, percent by mass.	0.01 Maximum	
06.	Chloride (as KCl), percent by mass.	0.25 Maximum	

15. XANTHAN GUM - XC POLYMER

SR. NO.	PROPERTIES	REQUIRED SPECIFICATIONS AP PER API SPECIFICATION 13A SECTION 18	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical State	The material should be a free flowing powder, free from lumps, dirt and foreign matter	
02.	Moisture mass fraction	13 % (Maximum)	
03.	Presence of Starch, Guar or their derivative	Absent	
04.	Mesh size		
	Less than 425 µm	95% Minimum	
	Less than 75 µm	50% Maximum	
05.	Viscosity		
	Rotational viscometer, 300 rpm	11cP Minimum (Minimum 55 Dial Reading)	
	Rotational viscometer, 6 rpm	180 cP Minimum (Minimum 18 Dial Reading)	
	Rotational viscometer, 3 rpm	320 cP Minimum (Minimum 16 Dial Reading)	

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	Low shear-rate viscometer 1.5 rpm	1950 cP Minimum	
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16.

HYDROGEN SULPHIDE SCAVENGER
(ZINC CARBONATE)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical State	White crystalline powder, free from dirt and any foreign material	
02.	Density (g/ cm ³)	3.5	
03.	Zinc content (weight percent)	55% Minimum	
04.	Loss on ignition (weight percent)	25-30% Maximum	
05.	Moisture	2.5% Maximum	
06.	Heavy metal (as Pb)	0.05% Maximum	
07.	Sulphate (SO ₄)	0.80% Maximum	
08.	Particle size	Min 95% should pass through 200 Mesh	
09.	Reactivity	1.0 PPB scavenges 500 PPM Hydrogen Sulphide Minimum	

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17.

POLYANIONIC CELLULOSE - REGULAR GRADE
(PAC-R)

SR. NO	DESCRIPTION	REQUIRED SPECIFICATION AS PER API 13A-SECTION-17	PROPERTIES OF THE QUOTED PRODUCT
01.	Appearance	Off white powder	
02.	% age purity of PAC as (Na-CMC)	90 % (Minimum)	
03.	Moisture mass fraction	10% Maximum	
04.	Presence of starch or starch derivatives	Absent	

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05.	Apparent Viscosity	50 cP Minimum	
06.	API Filtrate Volume	23 ml Maximum	

**18. POLY ANIONIC CELLULOSE (LOW VISCOSITY GRADE)
(PAC-LV)**

A:

SR. NO.	DESCRIPTION	REQUIRED SPECIFICATION AS PER API 13A-SECTION-16	PROPERTIES OF THE QUOTED PRODUCT
01.	Appearance	Off white, free flowing powder.	
02.	% age purity of PAC as (Na-CMC)	90 % (Minimum)	
03.	Presence of starch or starch derivatives	Absent	
04.	Moisture mass fraction	10% Maximum.	
05.	Apparent Viscosity	40 cP Maximum	
06.	API Filtrate Volume	16 ml Maximum	

19. EXTREME PRESSURE MUD LUBRICANT

A:

SR. NO	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Dark viscous liquid at ambient temperature, free from suspended impurities	
02.	Specific Gravity	0.90 – 0.97 (S.G)	
03.	Flash point	>99°C	

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B) PERFORMANCE TESTS:

SR. NO	PERFORMANCE TEST	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
<u>LUBRICITY TEST:</u>			
01.	a) In Fresh Water Mud: Prepare 7.5% (w/v) Bentonite suspension in distilled water, by stirring with a lab stirrer (5000-6000 rpm) for 30 minutes and ageing at 90° C for 48 Hrs. and re-stirring the same for 15 minutes at 25° C. Add appropriate quantity of distilled water to adjust apparent viscosity in the range of 15-16 CP. Add 0.5% (w/v) of the product, stir with Hamilton Beach Mixer for 15 minutes at high speed. Measure lubricity coefficient by Lubricity Tester.	0.15 (Maximum)	
	b) In Salt Water Mud: Prepare 8-10% (w/v) Bentonite suspension in distilled water, by stirring with a lab stirrer (5000-6000 rpm) for 30 minutes and ageing at 90° C for 48 Hrs. Add 4% (w/v) Sodium Chloride (LR grade) and age for 24 Hrs. at 25°C. Adjust the apparent viscosity of this suspension to 15-16 CP by dilution with 4% Sodium Chloride Solution. Then add 0.5% (w/v) of the product, stir with Hamilton Beach Mixer for 15 minutes at high speed. Measure lubricity coefficient by Lubricity Tester.	0.20 (Maximum)	
<u>EXTREME PRESSURE - LUBRICATION TEST</u>			
02.	a) In Fresh Water Mud: Prepare Bentonite suspension as mentioned at Sr. No.01 (a) and filter through 200 mesh and similarly treat with 0.5% (w/v) of the product, stir with Hamilton Batch Mixer for 15 minutes at high speed. Determine its film strength at 300 in-lb load and 1000 rpm with E.P Lubricity Tester.	20,000 psi (Minimum)	 Muhammad Aamir Salim E.P Lubricity Tester Ext: 3503
	b) In Salt Water Mud: Prepare salt water Bentonite suspension as mentioned at Sr. No. 01(b) and similarly treat with 0.5% (w/v) of the product, stir with Hamilton Batch Mixer for 15 minutes at high speed. Determine its film strength at 300 in-lb load and 1000 rpm with E.P Lubricity Tester.	20,000 psi (Minimum)	 Rizaz Ahmed Mangi Manager I/C (DS) Ext: 3737
03.	<u>Foam Test:</u> Prepare fresh water Bentonite suspension at Sr. No.01 (a) and add 0.5% (w/v) of the product. Stir for 15 minutes at high speed in Hamilton Batch Mixer and determine S.G of mud after waiting of 01 minute.	>0.80	

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20. MUD DETERGENT

A)

SR. NO	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Clear Viscous liquid	
02.	General Chemical Composition	Please specify in the next column	
03.	Specific Gravity at 25 °C	1.00 – 1.10	
04.	pH of 1% (v/v) solution of the product in distilled water.	7.0-9.0	
05.	Solubility i) Water Soluble ii) Brine Soluble	Yes Yes	
06.	Freezing Point	1°C (30 °F) or less	
07.	Flash point	Greater than 210 °F(99 °C)	
08.	Dosage Range	Please specify in the next column	

B) PERFORMANCE TESTS:

SR. NO	LAB TESTS	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Surface tension of 0.25% (v/v) solution of the product in distilled water at 25°C, dynes/cm	35.0 (Max)	
02.	<u>Emulsion Stability Test:</u> Take 485ml of distilled water, add 15ml High Speed Diesel Oil (HSD) slowly while stirring with Hamilton Beach Mixer at medium speed. Add 01ml of the product while stirring, continue stirring for 05minutes. Transfer the	<i>AS</i> Muhammad Asamir Salim E.Dip (Petroleum) Ext: 3503	<i>Uz</i> Riaz Ahmed Mangi Manager I/C (DS) Ext: 3737

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	<p>contents to 500ml measuring cylinder to observed phase separation,</p> <p>a) Immediate separation of HSD oil</p> <p>b) Separation of HSD oil after 24hrs at room temperature.</p>	<p>Nil</p> <p>06ml (Max)</p>	
03.	<p><u>Mud Lubricity Coefficient:</u></p> <p>Prepare 10cp Bentonite suspension in distilled water, add 0.5% (v/v) of product and stir for 05minutes in Hamilton Beach Mixer at medium speed. De-foam it with 04-05 drops of defoamer (if necessary).</p> <p>Determine Lubricity coefficient with lubricity ester.</p>	<p>0.30 (Max)</p>	
04.	<p><u>Foaming Tendency Test:</u></p> <p>Prepare 0.1% (v/v) solution of the product in distilled water, stir for 10minutes in Hamilton Beach Mixer at high speed. Immediate transfer the contents along with foam to measuring cylinder. Allow to stand for 15minutes and then measure the total volume of the contents along with foam. %increase in volume should be.</p>	<p>05% (Max)</p>	<p><i>AS</i></p> <p>Muhammad Aamir Salim E.Dip (Chemistry) Ext: 3503</p>

21. MUD DEFOAMER

A)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Physical State	Liquid	
2.	Specific Gravity	0.85 – 1.04 S.G.	

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3.	Chemical nature	Blend of high molecular alcohols & light petroleum distillate	
4.	pH (1 % aqueous solution)	7.5 – 8.5	
5.	Kerosene Oil	> 50 % Minimum	
6.	Flash Point	> 50 °C Minimum	
7.	Freezing Point	Less than 0 °C	
8.	Dosage range in case of severe foaming problem in KCL-PHPA polymer mud system	Please mention in % v/v in next column	

a) PERFORMANCE TEST

SR. NO.	PERFORMANCE TEST	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	<p>Prepare 7% Bentonite suspension in distilled water and age for 24 hrs at 90°C.</p> <p>Stir the sample in Hamilton Beach Mixer at low speed for 15 minutes and increase up to 1.30 SG with API Barite. Add 3% (w/v) Gypsum followed by 3% (w/v) KLS. Adjust pH between 9-9.5 by adding 5N caustic soda solution. Stir for 30 minutes with a Hamilton Beach Mixer at high speed. The S.G of stirred mud should fall below 1.05 by adding appropriate quantity of KLS. Treat with 500 ppm of product. Stir for 30sec and determine SG of mud.</p>	1.28 Minimum	

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22. CORROSION INHIBITOR (FILMING AMINE TYPE)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Clear brown to yellow color liquid	
02.	Chemical nature	Filming amine type Combination of Imidazoline & Ethoxylated Fatty Amines	
03.	Amine content	As per vendor specifications. OGDCL requires minimum 15% tertiary amine	
04.	Surfactant in formulation	The product should also contain Non-Ionic Surfactant	
05.	Odor	Aromatic	
06.	Specific Gravity	1.01 – 1.03 at 20°C	
07.	pH range	7.0 – 9.0	
08.	Pour point	Less than -5°C	
09.	Flash point	Greater than 75°C	
10.	Solubility	100% soluble in water	

23. POLY GLYCOL

SR. NO	PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Pale Yellow to opaque, brown Liquid	
02.	Specific Gravity	1.0-1.015	
03.	Solubility in water	Miscible in fresh water to a salinity of min 90,000 mg/ltr Cl ⁻	
04.	Cloud Point	>150°F (66°C) @ 3% in 6% NaCl.	
05.	Flash Point	230°F (110°C) (PMCC)	

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24. CALCIUM BROMIDE SOLUTION

SR. NO	DESCRIPTION	REQUIRED SPECIFICATION	PROPERTIES OF THE QUOTED PRODUCT
1.	Physical State	Clear Brine	
2.	Purity as CaBr ₂	52% (Minimum)	
3.	pH (5% solution at 25 °C)	6.0 – 8.0	
4.	Density	14.2 lb/US gallon (Minimum)	

25. ZINC BROMIDE SOLUTION (72% ZnBr₂, HAVING S.G 2.30)

SR. NO.	DESCRIPTION	REQUIRED SPECIFICATIONS	PROPERTIES OF THE QUOTED PRODUCT
1.	Physical State	Clear brine	
2.	% of ZnBr ₂ (by weight)	72 % Minimum	
3.	Chloride content	0.2 % Max	
4.	Sulphate Content	0.05 % Max	
5.	Heavy metal as lead	5 ppm Max	
6.	Iron	10 ppm Max	
7.	Specific Gravity	2.3 min	
8.	pH	4 - 5	
9.	Water insoluble	None	

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26. HIGH PERFORMANCE WATER BASE MUD SPECIFICATIONS

Mud Type	High Performance Water Base Mud	High Performance Water Base Mud	High Performance Water Base Mud
Weight (sg)	1.24 - 2.0	1.80 - 2.17	1.10 - 2.17
BHT	175°F	235°F	300°F
HTHP @ 250°F	N/A	< 17	< 17
pH	9.0-10	9.0-10	9.0-10
Hard (Ca++)	80-150	80-150	80-150
MBT (ppb)	< 10	< 10	< 10
CST (sec)	< 100	< 100	< 100
LSM	< 15%	<15%	<15%
Accretion	< 10%	<10%	<10%
Shale erosion	< 90%	< 90%	< 90%

27-31 OIL BASE MUD CHEMICALS PACKAGE

DETAILS OF PACKAGE

The package will consist of the following chemicals/additives.

- 27.** Primary emulsifier for oil base mud
- 28.** Secondary emulsifier for oil base mud
- 29.** Viscosifier / Oil base mud gel
- 30.** Fluid Loss Control Agent / high temperature stabilizer for oil base mud
- 31.** Wetting agent for oil base mud

PERFORMANCE TEST

The supplier will mention the exact quantities of the above said chemicals / additives of the package, Barite and HSD oil along with detail mixing procedure to formulate 1 liter of oil base mud (oil water ratio 90:10, containing 28 grams of 94 % pure anhydrous calcium chloride CaCl₂) in 100 ml distilled water (having the following properties at 49(+/-) 3°C.

- 1. Specific Gravity = 2.0
- 2. Yield Point = 30 lbs/100 sq.ft (Maximum)
- 3. HT-HP Fluid Loss at 170° C and 500 Psi differential pressure=10 ml (Max)
- 4. Break Down Voltage = 1200 volts (Minimum)

The oil base mud having above mentioned properties, when hot rolled in a roller oven for 16 hrs at 170°C, cooled to 49 (+/-) 3° C and stirred for 20 minutes in Hamilton Beach Mixer at high speed, should have not more than 10 % variation in the values of above mentioned properties.

AS
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E.Dip (Petroleum)
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Manager I/C (DS)
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SR. NO	PROPERTIES	BEFORE HOT ROLLING	AFTER HOT ROLLING AT 170°C
1.	Specific Gravity (S.G)		
2.	Yield Point (lbs/ 100 sq.ft)		
3.	HT-HP Fluid Loss (ml)		
4.	Break Down Voltage (volts)		
Note: - Details of Mixing Procedure to be provided by each Bidder is mandatory.			

Note: Performance tests of all Water Base & Oil Base Mud Chemicals will be carried out by OGDCL Lab.

32. BARITE POWDER

A:

CONFORMING TO API SPECIFICATION 13-A FOR BARITE AS GIVEN BELOW:

I)	Density	4.20 G/CM³ (MIN)
II)	Water Soluble Alkaline Earth Metals as Calcium	250 MG/LITRE, MAX.
III)	Wet screen analysis:	
	A) Residue on us sieve no. 200	3% MAXIMUM
	B) Residue on us sieve no. 325	5% MINIMUM

B: PACKAGING:

Barite Powder should be packed in one (01) M.Ton jumbo bag, export quality having thick inner liner for rendering the material completely moisture proof.

C: INSTRUCTIONS TO THE BIDDER:

1. **API APPROVED MANUFACTURER**

2. **RIG/ WELL SITE STOCK**

AT LEAST 1000 M.TONS IN NORTH REGION

3. **RESERVE STOCK:**

2000 M.Ton Barite will be kept in reserve stock at Contractor's Base for lifting in emergency.

From
FAZAL FAHIM
 Manager I/C (DS)
 Ext: 2373

Vetted
 Please.
 Saima
SAIMA MAJID SOOD
 Ext: 3737

Riaz Ahmed Mangi
 Manager I/C (DS)
 Ext: 3737

Muhammad Amir Salim
 E.P./Petroleum
 Ext: 3503

33. LIME STONE POWDER

A

SR. NO	DESCRIPTION	REQUIRED SPECIFICATION	PROPERTIES OF THE QUOTED PRODUCT
1.	Physical State	Free from dirt & foreign material	
2.	Specific Gravity (S.G)	2.65 (Minimum)	
3.	% Purity as CaCO ₃	95% Minimum	
4.	Solubility in 15% HCL	95% Minimum	
5.	Water soluble contents	Less than 200 PPM	
6.	Retention on 200 US Mesh Sieve	Less than 05% by weight	
7.	Shelf life	Minimum 03 Years	

B: PACKAGING:

Should be packed in one (01) M.Ton jumbo bag, export quality having thick inner liner for rendering the material completely moisture proof.

34. CAUSTIC SODA FLAKES

A

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	White deliquescent flakes	
02.	Concentration as NaOH %	97% Minimum	
03.	Sodium chloride %	0.04 % Maximum	
04.	Sodium Carbonate %	01 % Maximum	

B: PACKAGING:

Should be packed as 25 Kg net per bag in export quality HDPE bags having thick inner liner for rendering the material completely moisture proof.

Final
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Riaz
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A
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E.D/Petroservey
Ext: 3503

35. SODA ASH

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Percentage purity (Total Alkalinity as Na ₂ CO ₃)	97% Minimum	
02.	Chloride as NaCl (percent by mass)	0.85 % Maximum	
03.	Iron as Fe ₂ O ₃ (percent by mass)	0.007% Maximum	
04.	Matter insoluble in water (percent by mass)	0.15% Maximum	
05.	Sulphates as Na ₂ SO ₄ (percent by mass)	0.08% Maximum	
06.	Bulk Density (gms/ Liter)	450-600 gms/ Liter	

36. SODA BICARB

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	Fine White Powder	
02.	Percentage purity (total alkalinity as NaHCO ₃)	98 % Minimum	
03.	Loss on Drying (% by weight)	0.20 % Maximum	
04.	Insoluble substances	Clear solution on dissolving 1 gm in 20 ml water)	

37. ANHYDROUS CALCIUM CHLORIDE

A

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Physical appearance	White prills/ flakes, free from impurities	
02.	Purity as anhydrous Calcium chloride (CaCl ₂) (percent by mass)	94% Minimum	
03.	Specific Gravity	2.15 Minimum	
04.	Alkalinity as Ca(OH) ₂ (Percent by mass)	0.5% Maximum	

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Uz
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AS
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E.D. Retrosary
Ext: 3563

FAYAL RAHIM
T. Manager I/C (D.S)
Ext: 3737 (D.S)

05.	Concentration of soluble salts as MgCl ₂ , NaCl, KCl etc. (Percent by mass)	4.0 % Maximum	
06.	Matter insoluble in water (Percent by mass)	0.5 % Maximum	
07.	Density of CaCl ₂ saturated brine	11.6 ppg (1.40 S.G)	

B: PACKAGING:

Should be packed in one (01) M.Ton jumbo bag, export quality having thick inner liner for rendering the material completely moisture proof.

38. COMMON SALT

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
01.	Appearance	White powder	
02.	Purity as NaCl % (on bone dry basis)	95% Minimum	
03.	Moisture content %	5 % Maximum	
04.	Matter insoluble in water	Not more than 01%	
05.	Sieve analysis Retention on US Mesh No.16 screen	Not more than 5% Moreover no particle size must be greater than 10 mesh	<i>AS</i>

Muhammad Amir Sultan
 E.D/Petrocity
 Ext: 3583

39. NON DAMAGING CELLULOSIC FIBROUS LCM (FINE)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Particle size	(i) 80-90% should pass thru 100 mesh screen. (ii) No particle size must be greater than 4 mesh in any case out of retention on 100 mesh screen.	<i>AS</i>
2.	Specific Gravity	0.4 to 0.5	
3.	Thermal Stability	220 °C (Minimum)	

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 FAZAL RAHMAN
 T.O Manager I/C (DS)
 Dy. Chief Eng (DE)
 Ext: 2373

NAIMA MAQSOOD
 Senior Mud Engineer
 Ext: 2221

COARSE:

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Particle size	(i) Retention on 80 mesh should not be less than 80%. (ii) Retention on 10 mesh should not be more than 10%. (iii) No particle size must be greater than 3 mesh in any case out of retention on 10 mesh screen.	
2.	Specific Gravity	0.4 to 0.5	
3.	Thermal Stability	220° C (Minimum)	

PACKAGING:

- 12.5kg/bag of the product
- Should be packed in good quality multi-wall paper (at least 03 plies). The bags should also have inner polythene layer to render the material moisture proof.
- Palletized, shrink wrapped and strapped

40. SAW DUST

A

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Physical appearance	Dry, free from any foreign material and wooden chips	
2.	Sieve analysis Retention on US Mesh No 10 screen	Not more than 05% . However no particle size must be greater than 04 mesh in any case out of 05% accumulation.	

B **PACKAGING:**

- 200 kg net per bag in brand new jumbo bags.

Vetted please.
Faisal
FAYAZ RAHIM
T.O. (D.S.)
By: Chief Eng. (D.F.)
Ext: 2373

Saima
SAIMA NASOOD
Senior Mud Engineer
Ext: 2221

Lis
Riaz Ahmed Mangi
Manager I/C (DS)
Ext: 3737

AS
Muhammad Aamir Salim
E.D.(Petroserv)
Ext: 3503

41. COTTON SEED HULL

A


SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Physical appearance	Solid, dry, free from dirt, foreign material & Linter	

B PACKAGING:

- 200 kg net per bag in brand new jumbo bags

42. MICA (FINE)

A

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Physical appearance	Dry, free from any foreign material, Silver to grey powder	
Sieve analysis			
2.	Retention on 10 Mesh screen	10% Maximum No particle size must be greater than 4 mesh in any case out of 10% accumulation.	 Muhammad Arif E.DIP (Inventory) Ext: 3503
3.	Retention on 100 Mesh screen	90% Minimum	

B PACKAGING:

Packed in 25 Kg export quality polypropylene bags with inner lining of polyethylene to render the material completely moisture proof.

The material should be palletized as 750 kg, wrapped & tightly strapped.

43. MICA (COARSE)

SR. NO.	PHYSICAL PROPERTIES	REQUIRED SPECIFICATIONS	EXACT VALUE OF THE OFFERED PRODUCT
1.	Physical appearance	Dry, free from any foreign material, Silver to Grey Flakes	

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Saima
SAIMA MAQSOOD
 Senior Mud Engineer
 Ext: 2221

Sieve analysis			
2.	Retention on 04 Mesh screen	5% Maximum	No particle size must be greater than 3 mesh in any case out of 5% accumulation.
3.	Retention on 10 Mesh screen	90% Minimum	

B PACKAGING:

- Packed in 25 Kg export quality polypropylene bags with inner lining of polyethylene to render the material completely moisture proof.
- The material should be palletized as 750 kg, wrapped & tightly strapped.

Item No.	Name of the Chemicals/ Additives	Specifications
44	Biocide	Biocide liquid, API and OCMA grade, packed in 05 gallon can.
45	Non Damaging Acid Soluble LCM	Blend of HEC and graded calcium carbonate suitable for preparing hi-vis pills to control fluid loss in producing formations, packed in 25kg, 3 ply export bags with inner polyethylene lining.

Vetted please. *Fare*
FARUQ RAHIM
 T.O Manager I/C (D.S)
 Dy. Chief Engg (DF)
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Saima
SAIMA KHAN
 Senior Mud Engineer
 Ext: 2221

Uz
Riaz Ahmed Mangi
 Manager I/C (DS)
 Ext: 3737

AS
Muhammad Amir Salim
 E.Dip (chemistry)
 Ext: 3503

EVALUATION CRITERIA

TECHNICAL EVALUATION CRITERIA

STEPS TO BE FOLLOWED FOR EVALUATION

Evaluation of the bids will be based on following:

- i) Submission of bids in compliance with general tendering instructions.
- ii) Conformity of Technical bids with Technical requirement and TOR.
- iii) Bidders qualifying mandatory requirements will be considered for further technical evaluation.
- iv) Technical-commercial evaluation as per technical evaluation points criteria of Qualifying marking system.
- v) Opening of Commercial / Financial bids of technically qualified bidders only.
- vi) Commercial / Financial evaluation of technically qualified bidders as per Financial Bid Format.
- vii) Technically qualified and commercially bid acceptance as per Techno-commercial criteria provided as part of the ITT and bid meeting it will be selected, subject to the acceptance of OGDCL terms and conditions of the contract.



*Vetted
Please*
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Dy. Chief Eng (DF)
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Saima
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Senior Mud Engineer
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Riaz
Riaz Ahmed Mangi
Manager I/C (DS)
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AS
Muhammad
E.Dr. Eng. (DF)
Ext: 3503

1. **MANDATORY REQUIREMENT**

S. No.	Description	Requirement	Bidder's Response
1.1	The Bidder should be internationally recognized and well established in rendering drilling fluid engineering services & supply of Mud Chemicals for minimum 10 years.	Mandatory	
1.2	In case of award of contract, Contractor must agree to provide Mud chemicals along with Mud Engineering Services anywhere in Pakistan.	Mandatory	
1.3	Each bidder should have well established base along with mud chemical yard with substantial quantities of mud chemicals (local & imported) in stock and adequate stock of the standard drilling fluid testing equipment and their spares, mud testing chemicals, reagents, consumables etc. as well as fully operational Drilling Fluids analytical / engineering lab equipped with standard / modern mud testing equipment in Pakistan. Moreover, all chemicals bags & Lab reagents to be marked with manufacturing / expiry dates and shelf life of the chemical clearly mentioned on tags. In case the Bidder has no permanent establish base & lab facilities in Pakistan, it shall be established conforming clause-3 of TOR within 45 days from the issuance of LOI. Bidder to confirm same.	Mandatory	
1.4	Bidder shall have sufficient inventory of Mud Chemicals and Testing Equipment/ Labs for each Well, available in Pakistan throughout the contract duration to meet Company's operational requirements. (If bidder has no established base in Pakistan, then it shall establish the same within 45 days after issuance of LOI).	Mandatory	 Muhammad Asim Salim E.D.P (D/S-3047) Ext: 3503
1.5	Bidder to confirm if Research & Operational support base is also available outside Pakistan to support the operations of OGDCL.	Mandatory	
1.6	In case of award of Contract, Mud Engineering Services along with Mud Chemicals shall be made available at OGDCL's well locations after issuance of LOI. However, in case of non-availability of base in Pakistan, the Services will be provided after establishment of base but not exceeding 45 days after issuance of LOI. Bidder to confirm same.	Mandatory	 Riaz Ahmed Mangi Manager I/C (DS) Ext: 3737
1.7	Bidder will have to submit the proof of satisfactory track record, as per clause 5 & 6 of TOR and clause 3.1 of Technical Evaluation Points Table, for provision of Mud Engineering Services along with Mud chemicals provided in or outside Pakistan with major E&P companies including but not limited to Saudi Aramco, ENI, OMV, SHELL, CHEVRON, MOL, BHP etc, during recent past 10 years. E-mail addresses and contact numbers (other than OGDCL) of the clients to whom they have provided services during the recent past 10 years.	Mandatory	

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FAZAL RAHIM
Manager I/C (D/S)
Ext: 2373

AJMA MANSOOR
Senior Mud Engineer
Ext: 2221

1.8	Case histories alongwith relevant detailed data of mud systems to be submitted as per clause 3.4 of Technical Evaluation Points Table.	Mandatory	
1.9	Mud chemicals should be of A-One grade and should fully comply with API or specifications mentioned at Section-H.	Mandatory	
1.10	Bidder to mention the source of each chemical. The products from Indian origin are not acceptable as per SRO-927 (i) / 2019 dated 09-08-2019.	Mandatory	
1.11	Bidder and their mud chemical suppliers must conform to QA/QC and Environment, Health & Safety Standards. Proof for same to be submitted.	Mandatory	
1.12	All the bidders must have to submit the One (01) kg / one (01) Litre samples of fifteen (15) no. of mud chemicals along with technical bids or within fourteen (14) days as per clause-9 of TOR. Bidder to confirm the acceptance of Clause-9 of TOR.	Mandatory	
1.13	Bidder must confirm to maintain sufficient chemicals inventory to provide Mud Chemicals to OGDCL for minimum of 6-8 Rigs operations simultaneously.	Mandatory	
1.14	Bidder must have its own "Employee Competency and Training System". Relevant record of training matrix should be submitted along with bid documents.	Mandatory	
1.15	Each bidder will submit complete data documents such as Technical specification sheets & MSDS for each of proposed mud chemicals as per technical specifications at mentioned Section-H or as per industry prevailing practices.	Mandatory	
1.16	Each bidder will submit QA/QC certificate / Certificate of Analysis (CoA) from an internationally reputable laboratory or from the original manufacturer for each of their proposed Mud chemicals.	Mandatory	
1.17	Each bidder will submit brand name, country of origin and dosage range for each of their proposed Mud chemicals which may be used for future reference.	Mandatory	
1.18	OGDCL has the right to get sample of Mud / Mud Chemical alongwith its consignment no. of contractor from Rig Site and get tested from OGDCL lab or any recognized lab in Pakistan at any time without witness of Contractor's representative or prior notice and information to the Contractor. Bidder to confirm the same.	Mandatory	

Handwritten signature
 Dr. Chahar I/C (D.S)
 Ext: 2573 (D/S)

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SANMA MAQSOOD
 Senior Engineer
 Ext: 222

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Riaz Ahmed Mangi
 Manager I/C (DS)
 Ext: 3737


Handwritten signature
Muhammad Anamir Salim
 E.D (Inventory)
 Ext: 3503

1.19	During the whole contract period if any material/chemical found to be Sub-standard then it will be deducted/charged at zero rate being consumed at all OGDCL locations against that consignment, with no excuse without assigning any explanation. Beside this, action will also be taken against the contractor as per company's rule. Bidder to confirm the same.	Mandatory	
1.20	The Useful Life or Shelf Life of all the Mud Chemicals, provided by the contractor during the contract period, should be beyond the contract period.	Mandatory	

MANDATORY LAB TESTING EQUIPMENT REQUIREMENT

1.21	The contractor should provide complete Mud Testing Equipment, chemical reagents and glassware, etc. at well site required for job for maintaining excellent mud parameters (OGDCL will not be responsible to provide the same). List of such material is to be submitted / comprehended along with the bid.	Mandatory	
1.22	Beside the conventional testing equipment, HPHT Filter Press, 6-8 speeds/ variable speed Rheometer, MBT kit, Pilot test kit, Digital pH meter, Garret gas train with complete array of Dragger's tubes or any other equipment required for testing of fluid, will also be provided as per requirement of OGDCL at no extra cost.	Mandatory	
1.23	Bidder must confirm to have all laboratory equipment calibrated during the tenure of contract and provide an example of Calibration Tracking for laboratory Equipment.	Mandatory	
1.24	Bidder to have drilling & completion fluid software with following minimum modules but not limited to Hydraulics, Hole Cleaning etc. In order to get points as per 3.8 of Technical Evaluation Points Table, proof of all mentioned requirements be submitted.	Mandatory	 Muhammad E.D.P. No. Ext: 3503
1.25	Bidder must be capable and confirm to perform specialized tests as per Section-F on as required basis.	Mandatory	
1.26	After award of contract, the Contractor will also confirm to arrange special mud tests on actual shale cuttings (if required) from Analytical mud laboratory abroad at no cost to OGDCL. Bidder to confirm the same.	Mandatory	

MANDATORY PERSONNEL REQUIREMENT

1.27	The contractor should have a technical coordinator / consultant stationed in Pakistan, at no additional cost to OGDCL, as per TOR clause-31. Minimum 01 No. CV of consultant should also be enclosed with the technical bid.	Mandatory	 Riaz Ahmed Mangi Manager I/C (DS) Ext: 3737
1.28	All proposed personnel (i.e. Mud Engineers and Technical coordinator) should be fluent in spoken and written English.	Mandatory	

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Please.
Saima
Senior Mud Engineer
Ext: 2221

1.29	OGDCL has the prerogative to either acquire both Mud Engineering services and Mud Chemicals or Mud Chemicals alone subject to OGDCL's requirement at any well.	Mandatory	
1.30	Compliance/Acceptance of all terms & conditions of the Bid documents and provision of past Three (03) Years Audited Financial Reports.	Mandatory	
HSE REQUIREMENT			
1.31	Availability of HSE Policy (please attach copy)	Mandatory	
1.32	Auditing, Review & HSE Management System (please attach document)	Mandatory	
1.33	HSE Track Record of last three years of operation (please attach document)	Mandatory	
1.34	Emergency, Response Plan for activities on Location (please attach document)	Mandatory	
1.35	General HSEQ Training for Proposed Personnel (Please attach Training Matrix)	Mandatory	

2. TECHNICAL EVALUATION POINTS TABLE (SEE BELOW SEPARATE TABLE)

Note:

- 1- Bidders must qualify Mandatory Requirement / Key Acceptance Criteria to be considered for detailed technical evaluation in this tender.
- 2- All reports / documentary proofs / performance letters / records / management systems / company profile etc. must be provided in English language (or translated in English).
- 3- Proof of all Mandatory requirements shall be submitted by bidder. In case of non-availability of the documents, bids shall be disqualified.
- 4- Only technically qualified bidders will be further evaluated based on techno-commercial criteria for Contract Award.

AS
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Senior Mud Engineer
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Sr.#	Description	MAX allotted points	Point Allocation	Bidder 1	Bidder 2	Bidder 3
3.1	Bidder's continuous operating experience: a) Above 20 years Global experience (20 points) b) Between 10 to 20 years' experience within Pakistan (10 points) c) Between 10 to 20 years global experience (5 points) d) Less than 10 years Global experience (Disqualified) Bidder to submit verified data e.g. client testimonial, letters etc. as a proof. Answer to be based on highest experience e.g. if Bidder has continuous operating experience of operating Globally (even if it excludes Pakistan) for more than 20 years it will still qualify for 20 points.	20	a) >20 years=20, b) 10-20 years =10, c) 10-20 years = 5, d) <10 years = Disqualified			
3.2	Bidder to provide SPE Papers on High performance Water Based Mud System (presented on Global basis).	5	>5 Papers = 5, 2-5 Papers = 3, <2 = Zero			
3.3	Bidder's Quality Management System is in compliance with applicable API Q2 process for services delivery.	5	(If YES=5, No=Zero)			
3.4	Addressing Local Drilling Challenges through Bidder's experience of designing & running following High Performance mud systems in Pakistan. Provide applicable data verified by the relevant customers and well names for not more than last (10) years period. Data older than 10 years will not be counted towards points allocation.					
3.4.1	High Performance Water Based Mud (WBM) mud system that is Amine based	5	>100 Sections = 5, 50 - 100 Sections = 3, <50 Sections = Zero			
3.4.2	HTHP Oil Base Mud System	5	>50 Sections = 5, 20 - 50 Sections = 3 <20 Sections = Zero			
3.4.3	High Performance Water Based Mud System on High inclination (above 50deg) and/or Horizontal wells	5	>15 Wells = 5, 5 - 15 Wells = 3, <5 wells = Zero			
3.4.4	High Performance Water Based Mud System on High Temperature & High Pressure (HTHP) wells.	5	>15 Sections = 5, 15 - 10 Sections = 3, <5 Sections = Zero			
3.4.5	Bidder to present case histories for curing severe losses through using High Performance mud chemicals. Provide customer confirmation (email or letter) that case history is related to successfully curing losses.	5	2 cases = 5 points; < 2 cases = Zero			

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Faisal Rahim
Manager I/C (DS)
Chief Eng (DS)
Ext: 2373

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SAHAB MOUSSA
Senior Mud Engineer
Ext: 2221

3.5	Bidder needs to have fully operational Drilling Fluids analytical / engineering lab equipped with standard / modern mud testing equipment in Pakistan. (In case of new set up confirm setting up in 45 days period from issuance of LOI)	5	(If YES= 5, No=Zero)			
3.6	Bidder needs to have fully operational Drilling Fluids analytical / engineering lab equipped with standard / modern mud testing equipment Regionally or on Global basis able to perform specialized tests including but not limited to XRD analysis (clay typing), CST, LSM, Accretion, Shale recovery, and will be part of Mud Design/Program.	3	(If YES= 3, No=Zero)			
3.7	Evaluation of submitted samples of Mud Chemicals with technical specification at Section-H. Max one point available per sample conforming to OGDCL specification with total fifteen (15) points available					
3.7.1	Water Base Mud Chemicals consisting of ten WBM samples	10	7 or above samples conforming OGDCL Specs = 1 point for each sample < 7 samples conforming OGDCL specs = Disqualified			
3.7.2	Oil Base Mud Chemicals Package consisting of five OBM samples	5	OBM Package conforming OGDCL specs = 5, OBM Package not conforming OGDCL specs = Disqualified			
3.8	Bidder to have Drilling & Completion Fluid software with minimum modules for hydraulics, hole cleaning, ECD, Fluid Temperature simulations and loss circulation control design.	5	(If YES=5, No=Zero)			
3.9	Minimum Ten (10) Senior/Lead Mud Engineers having relevant work experience and mud school completed for each person. Points will only be allotted if both "a" and "b" below are met: a) Work experience and mud school training criteria are fulfilled. b) Bidder to confirm that it has an in-house "Employee Competency and Training System". Training matrix to be submitted as part of verification process. Max one point available per CV and ten (10) points 10 CV. Additional 02 points for 12 and above CVs.	12	work experience: >8 yrs = 1 Point, b/w 06 to 8 yrs = 0.5 Point, <6 years = Zero			

Muhammad
E. Director
Ext. 2003

FAZAL
Manager (C.A.)
Dy. Chief Engineer
Ext. 2221


vetted please.

Senior Mud Engineer
Ext: 2221

3.10	Senior / Lead Engineers (as per item 3.9) are all Pakistani Nationals (Rationale: certain Rigs operate in high Security areas/zones and only Pakistani Nationals are allowed to work in such areas/zones). Submit CV accordingly. Max one point available per Pakistani National with total ten (5) points available.	5	06 to 10 Pakistani Nationals = 1 point for each CV, <5 Pakistani Nationals = Zero			
Total Points - Technical Evaluation Computation (Max available 100 points) - "A"		100	-			

Notes:

1. OGDCL reserves the right to verify any data provided herein. However, it is Bidder's responsibility to provide verified data.
2. OGDCL reserves the right to interview offered Lead/Senior mud engineers.
3. Well means complete "well" and Section means any one hole section e.g. 8-1/2" hole section in the well.
4. In the column "Bidder" the points will be filled, that Bidder is eligible for.

vetted please.

SAIFULLAH
 Senior Mud Engineer
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Fazal

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 T.O Manager I/C (D.S)
 Dy. Chief Eng (D/S)
 Ext: 2373

Cir
Riaz Ahmed Mangi
 Manager I/C (DS)
 Ext: 3737

AJ
Muhammad Aamir Salim
 E.D(Petroserv)
 Ext: 3503

COMMERCIAL BID FORMAT

(1 - 4)

Noted please
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**01. COMMERCIAL BID FORMAT FOR HIGH PERFORMANCE MUD
CHEMICALS FOR ALL REGIONS OF PAKISTAN**

SR#	DESCRIPTION	BRAND PRODUCT NAME (TO BE FILLED IN BY THE BIDDER)	UNIT OF MEASUREMENT	ESTIMATED QTY. REQUIRED	UNIT COST (US\$)	TOTAL COST (US\$)
1	API Bentonite (Non-Treated)		M.Ton	100.00		
2	API Bentonite (Treated)		M.Ton	100.00		
3	CMC(LV)		M.Ton	5.00		
4	CMC(HV)		M.Ton	5.00		
5	Pot. Lignosulphonate (KLS)		M.Ton	70.00		
6	Pot. Lignite (KL)		M.Ton	30.00		
7	Spotting Chemical SFT		M.Ton	70.00		
8	Shale Stabilizer (Sodium Asphalt Sulfonate, Soltex or equivalent)		M.Ton	70.00		
9	Potassium Chloride (KCl)		M.Ton	2000.00		
10	Xanthan Gum (XC Polymer)		M.Ton	50.00		
11	API Starch		M.Ton	70.00		
12	PAC (Regular)		M.Ton	150.00		
13	PAC (LV)		M.Ton	200.00		
14	PHPA		M.Ton	5.00		
15	Extreme Pressure Mud Lubricant		(55 Gln Drum)	100.00		
16	Mud Detergent		(55 Gln Drum)	150.00		
17	Mud Defoamer		(55 Gln Drum)	50.00		
18	Corrosion Inhibitor		(55 Gln Drum)	50.00		
19	Silicate Defoamer		10 Gln Can	200.00		
20	Sodium Formate		M.Ton	50.00		
21	Potassium Formate		M.Ton	50.00		
22	Magnesium Oxide		M.Ton	5.00		
23	Potassium Hydroxide (KOH)		M.Ton	5.00		
24	Sodium Poly Acrylate		M.Ton	5.00		
25	Sodium Acid Pyro Phosphate (SAPP)		M.Ton	5.00		

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SAIMA IQBAL
Senior Mud Engineer
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26	H ₂ S Scavenger (ZnCO ₃ / Zinc Oxide)		M.Ton	10.00		
27	Oxygen Scavenger (Sodium Sulfit)		M.Ton	5.00		
28	Non-Sulphide Oxygen Scavenger or Organic Acid Salt		M.Ton	5.00		
29	Aluminum Stearate		M.Ton	10.00		
30	Poly Glycol		(55 Gln Drum)	20.00		
31	Bactericide/ Biocide		(55 Gln Drum)	20.00		
32	Calcium Bromide Solution		IBC tank of 1 M ³	10.00		
33	Zinc Bromide Solution		IBC tank of 1 M ³	10.00		
34	Hydroxy Ethyl Cellulose –High Viscosity (HEC-HV)		M.Ton	5.00		
35	Hydroxy Ethyl Cellulose –Low Viscosity (HEC-LV)		M.Ton	5.00		
36	Bentonite Extender		M.Ton	2.00		
37	Attapulgate Clay (API Specification)		M.Ton	50.00		
38	Synergistic Polymer (Resinex or equivalent)		M.Ton	50.00		
39	Synthetic Polymer for HTHP Filtration Control Agent		M.Ton	50.00		
40	Modified Poly Saccharides for Filtration Control Agent		M.Ton	50.00		
41	High Performance Amine Base Shale Inhibitor (Amine Ethoxylate)		(55 Gln Drum)	500.00		
42	High Performance Anti-Bit Balling Agent / Non-ionic Polymer Clay inhibitor		M.Ton	70.00		
43	High Molecular Weight Liquid Emulsion Synthetic Polymer for Flocculent and Clay Encapsulator		(55 Gln Drum)	200.00		
44	High Performance organic Multivalent Amine for clay inhibition		(55 Gln Drum)	1000.00		
45	Citric Acid (H ₃ C ₆ H ₅ O ₇), 98-100% pure		M.Ton	10.00		
46	High Temperature Thermal Stabilizer / CO ₂ Scavenger		(55 Gln Drum)	20.00		

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Senior Mtd Engineer
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47	High Temperature Viscosifier		M.Ton	20.00		
48	Oil Mud Emulsifier/ Primary Emulsifier for OBM		(55 Gln Drum)	800.00		
49	Oil Mud Emulsifier/ Secondary Emulsifier for OBM		(55 Gln Drum)	1000.00		
50	Oil Mud Gel		M.Ton	70.00		
51	High Temp. Stabilizer/ Filtration control for OBM		M.Ton	70.00		
52	Oil Mud Surfactant/ Wetting Agent for OBM		(55 Gln Drum)	150.00		
53	Oil Mud Thinner for OBM		(55 Gln Drum)	50.00		
54	Blended LCM	Fine	M.Ton	40.00		
		Medium	M.Ton	40.00		
		Coarse	M.Ton	40.00		
55	Premium High Fluid loss LCM Plug		M.Ton	30.00		
56	Premium High Fluid loss LCM Plug for Reservoir		M.Ton	30.00		
57	Blend of Graphite & compressible LCM for High Fluid Loss Squeeze		M.Ton	30.00		
58	Resilient Sized Graphite LCM	Fine	M.Ton	20.00		
		Medium	M.Ton	20.00		
		Coarse	M.Ton	20.00		
59	Solid Spherical Co-Polymer beads	Fine	M.Ton	10.00		
		Medium	M.Ton	10.00		
		Coarse	M.Ton	10.00		
60	Hydratable / Swell able Polymer LCM		M.Ton	15.00		
61	Synthetic Fiber for Hole Cleaning (sweeping agent)		M.Ton	2.00		
62	Reticulated Foam LCM of different Sizes	Fine	M.Ton	20.00		
		Medium	M.Ton	20.00		
		Coarse	M.Ton	20.00		
63	Barite Powder (Imported)		M.Ton	200.00		
64	Barite Powder (Local)		M.Ton	500.00		
65	Lime Stone Powder (CaCO ₃)-(Local)		M.Ton	1000.00		

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Senior Manager
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66	Sodium Silicate (Local)		200 Litre / Drum	10.00		
67	Caustic Soda Flakes (Local)		M.Ton	50.00		
68	Soda Ash(Local)		M.Ton	30.00		
69	Soda Bicarb(Local)		M.Ton	30.00		
70	Calcium Chloride (Local)		M.Ton	800.00		
71	Lime (Local)		M.Ton	700.00		
72	Common Salt (Local)		M.Ton	200.00		
73	Mica (Fine) (Local)		M.Ton	50.00		
74	Mica (Coarse) (Local)		M.Ton	100.00		
75	Graded Ground Marble Chips (Local)	Fine	M.Ton	50.00		
		Medium	M.Ton	100.00		
		Coarse	M.Ton	100.00		
76	Non Damaging Cellulosic Fibrous LCM (Local)		M.Ton	100.00		
77	Rice Husk(Local)		M.Ton	20.00		
78	Saw Dust (Local)		M.Ton	50.00		
79	Cotton Seed Hull (Local)		M.Ton	50.00		
80	Cotton Seed Hull (Imported)		M.Ton	20.00		
TOTAL COST FOR WBM CHEMICALS FOR ALL REGIONS (B) :-						

NOTE:

- (i) Bidder should quote premium products. OGDCL will only accept Premium Products. OGDCL will have the final say in deciding that product is premium during evaluation. Bidder must submit relevant document showing that product is premium.
- (ii) Rate of chemicals all the Mud Chemicals (WBM, OBM, W.O / Completion Fluid) are to be quoted strictly as per units given in the bid.
- (iii) Specifications of the WBM, OBM Chemicals should meet OGDCL specifications at Section "H".
- (iv) Quantities of all the Mud Chemicals are estimated and for financial evaluation purpose only. However, payment would be made as per actual chemical consumption which may vary from estimated quantity as per OGDCL requirement for the required Mud or Brine System.
- (v) HSD consumed during Mud formulation will be provided by OGDCL.

Vetted please.

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02. COMMERCIAL BID FORMAT FOR MUD ENGINEERING SERVICES CHARGES

REGION	SENIOR / LEAD MUD ENGINEER			NIGHT MUD ENGINEER			TOTAL COST OF MUD ENGG. SERVICES CHARGES FOR BOTH MUD ENGINEERS (USD) (I = E + H)
	ESTIMATED NO. OF DAYS (C)	MUD ENGINEER CHARGES PER DAY RATE (USD) (D)	TOTAL CHARGES FOR SENIOR MUD ENGINEER USD (E = C X D)	ESTIMATE D NO. OF DAYS (F)	MUD ENGINEER CHARGES PER DAY RATE (USD) (G)	TOTAL CHARGES FOR NIGHT MUD ENGINEER (USD) (H = F X G)	
NORTH / CENTER / SOUTH	5000			5000			

Note: No. of days are tentative and are for commercial evaluation purpose only which are estimated for hiring of these services and may vary as per actual requirement of OGDCL.

03. SUMMARY OF COMMERCIAL BID FORMAT FOR HIGH PERFORMANCE MUD ENGINEERING SERVICES ALONG WITH CHEMICALS FOR ALL REGIONS

FINANCIAL BID FORMAT NO.	DESCRIPTION	TOTAL COST (USD)
01	Total Cost of High Performance Mud Chemicals in all regions of Pakistan (B)	
02	Total Cost of Mud Engineering Services in all Regions (I)	
SUM OF ALL ABOVE (J):		

i. The above prices are inclusive of all taxes duties, levies, charges etc., (Except ICT/PST/GST)

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Muhammad Amir Salim
Muhammad Amir Salim
 E.O(Petroser) Ext: 3503

04. SUMMARY OF TECHNO COMMERCIAL EVALUATION FOR HIGH PERFORMANCE MUD ENGINEERING SERVICES ALONG WITH CHEMICALS FOR ALL REGIONS

DESCRIPTION	TOTAL SCORE
Technical Points Obtained by Bidder	(A)
Weightage Technical Score	40%
Commercial Score Obtained by Bidder	(J)
Weightage Commercial Score	60%
Sum of total Score Obtained by Bidder (Technical and Commercial)	

Note:

- I. Technical evaluation will be conducted as per below formula:

$$\mathbf{T.E = (Bidder\ Score) / (Maximum\ Score) * 40\%}$$
- II. Commercial evaluation will be conducted as per below formula:


$$\mathbf{C.E = (Lowest\ bidder\ value) / (Bidder\ value) * 60\%}$$
- III. Final Score= T.E + C.E
- IV. The bidder getting highest "Total Score" shall stand first.

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 E.D(Petroservey)
 Ext: 3503

OTHER IMPORTANT INFORMATION

BIDDING METHOD:

Bids against this tender are invited on 'single stage Two envelop' on Techno-Commercial Basis.


AMOUNT OF BID BOND:

Bid Bond /Bid Security amounting to **USD 200,000/-** is to be attached / provided with the technical bid. Please see Master Set of Tender Document for further details.

MANDATORY REQUIREMENT

For online payment to vendors/contractors through (IBFT & LFT). Following info is required from your company: -

1. IBAN (INTERNATIONAL BANK ACCOUNT NUMBER 24 DIGITS).
2. VENDOR NAME AS PER TITLE OF THEIR BANK ACCOUNT.
3. NTN NO.
4. CONTACT # OF COMPANY CEO/OWNER (MOBILE & LANDLINE).
5. POSTAL ADDRESS.
6. BANK NAME.
7. BANK BRANCH NAME & ADDRESS.


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The master set of tender documents (services) uploaded on OGDCL's website (www.ogdcl.com) is the integral part of this TOR.

From
Bidders are requested to read TOR & Master Set to Tender Documents (Services) and provide complete information / documents including tender annexures with the bid.

Following is the link for Master Set of Tender Documents for Services:

<https://ogdcl.com/sites/default/files/tender%20download/Tender%20Document%20Services%20Press%20for%20Web%20loading-Bid%20Bond%20%26%20PBG%20Extension%20text%20added%20dated%202009-09-2020.pdf>

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