

**INDIAN COUNCIL OF AGRICULTURAL RESEARCH
KRISHI BHAVAN: NEW DELHI**

F. No. FIN/22/04/2025-CDN(A&A)(e- 368390)

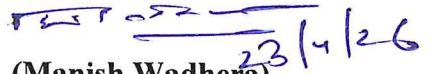
Date: 23rd April, 2026

ENDORSEMENT

Subject: Relaxation under Rules 161 (iv) of GFRs, 2017 for issuance of GTEs for procurement of certain items- Proposal of Ministry of Petroleum & Natural GAS (MoPNG)-reg.

Procurement Policy Division, Department of Expenditure, Ministry of Finance, GoI, has issued an Office Memorandum No.F.4/1/2024-PPD dated 15.04.2026 on the subject mentioned above.

As approved by the Competent Authority, this No.F.4/1/2024-PPD dated 15.04.2026 has been posted on the ICAR Web-Site www.icar.org.in and e-office for information, guidance and compliance.


(Manish Wadhera)
Deputy Director (Fin.)

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अपर सचिव एवं वित्त सलाहकार
(डेयर/भौ. कृ. अनु. परिषद)
Addl. Secretary & Fin. Adviser
(DARE/ICAR) 168/R. Date: 16/04/26.
डा. सं. / Dy. No. / R. Date: 16/04/26.

No.F.4/1/2024-PPD
Government of India
Ministry of Finance
Department of Expenditure
Procurement Policy Division

706, Chander Lok Building,
Janpath, New Delhi
15.04.2026

OFFICE MEMORANDUM

Subject: Relaxation under Rule 161 (iv) of GFRs, 2017 for issuance of GTEs for procurement of certain items - Proposal of Ministry of Petroleum & Natural Gas (MoPNG).

Attention is invited to this Department's OM No. F. 12/17/2019-PPD dated 15.05.2020 and 28.05.2020 regarding amendment in Rule 161(iv) of General Financial Rules (GFRs) 2017 stipulating that no Global Tender Enquiry (GTE) shall be invited for tenders upto Rs. 200.00 crore or such limit as may be prescribed by this Department from time to time, without prior approval from the competent authority i.e. Secretary (Coordination), Cabinet Secretariat.

2. In view of request of Ministry of Petroleum & Natural Gas (DO No. FP-20013/15/2020-FP-PNG (E-35203) dated 16.12.2025), a general relaxation is hereby granted under Rule 161(iv) of General Financial Rules (GFRs) 2017 for issuance of GTE for procurement of items listed at Annexure (attached below) till 31.03.2028. Secretary concerned will be the competent authority for approval of issuance of GTE for procurement of the items listed at Annexure.

Manish Bhatia

(Manish Bhatia)

Director

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To

Secretaries & Financial Advisors of all Central Government Ministries /Departments.

Copy to: Secretary (Coordination), Cabinet Secretariat.

Annexure pt.
25
15/4/26
For n.a. Dept
JS (Fin.)
16/04

DDP/S
16/4

FAO (Cdn)
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sh. Dinesh
16/04/26

Mid and Downstream related items

- A. **REFINERY & PETROCHEMICAL CATALYSTS:** Reformer Catalyst^{A1}, Hydro treating catalysts^{A2}, Hydrocracking Catalyst^{A3}, SRU catalyst^{A4}, FCC Catalyst^{A5}, Catalyst for LPG Maximisation^{A6}, Isomerisation Catalyst^{A7}, Catalyst for Lube / Base Oil Processing^{A8}, Hydrogenation Catalyst^{A9}, Hydro Desulphurisation Catalyst^{A10}, Petrochemical catalysts^{A11}, Petrochemical Co Catalysts^{A12}, HGU Catalysts^{A13}, Methanation Catalysts^{A14}, Catalyst supports^{A15}, Adsorbent and Adsorbent Catalysts^{A16}, Catalytic Materials^{A17}, Molecular sieves^{A18}, FGTU H2 purification catalyst, LC 2253 (LIQUID CATALYST, LC2253- SOLUTION OF TITANIUM COMPLEX IN TETRAHYDROFURAN), PRU COS Hydrolizer catalysts, Liquid oxidation Catalyst, Catalyst Additives; Heat generating material (Propane Dehydrogenation)
- B. **REFINERY AND PETROCHEMICAL SPECIALTY CHEMICALS AND ADDITIVES:** Desiccants^{B1}, Ethylene drying and CO2 removal bed, Propylene drying and CO2 removal bed, RSH and COS guard bed for propylene, Selective Control Agent^{B2}, Optical brightener, Stereo Regulating Agents, Slip additives Cracking Agents, Deactivating agents, catalyst protecting agent, Solvents and Nucleating agents, ATF Merox filter clay, Attapulgite, Organic peroxide^{B3}, Ethyl mercaptan, CJ (DIETHYLALUMINIUM ETHOXIDE), Additives^{B4}, Anti Static Additive^{B5}, Antioxidants for Polyolefins^{B6}, UV Stabilizer^{B7}, Stabilizer additive for Polyolefins^{B8}, Antiblock^{B9}, PD (2,4 Pentandione), Polymer processing additive (PPA), PG / Pelargonic acid / C8-C10 fatty acid, Slip Agent^{B10}, ACID SCAVENGER AND STABILIZER FOR POLYOLEFINS^{B11}, Deactivators^{B12}, Silane, PPU-Talc, Licowax PED 191 HDPE additive, NA 21 & HPN20E and NX 8000 Poly Propylene additives, Nucleating Agent (HPNA), H2S Scavengers, Release Agent (Silicone Polyether Co-polymer), Process Chemicals^{B13}, Fuel Stabilizers, Hexene-1, Polymer processing Aid Masterbatch (PPA MB), Masterbatch^{B14}; Lithium Hydroxide; TG Urea; Sodium Benzoate, NaBz; White Mineral Oil; Cellulose 100%/ Diatrose 010
- C. **IMPORTED LUBES, BASE OIL, ADDTIVES & GREASE:** Hydraulic Fluid Special Chemolube, Mechanical Seal Oil, Lubricating Oil Cp-4601-46 Make:Cpi Eng, Compressor Lube Oil Kobe 202-K3, Hot Oil (Therminol 66), Grease Special P/N:10550-027, Nycolube 7040, H.F.S Chemo Lube 5s, Kluber Summit Lube Oil PGI 150 / Kluber Summit Lube Oil PGI 46, CP-1507-68, Duraclear DS 4609-7-F, Protomec 320, Ethylene Glycol, Gas Compressor Oil (CP-1516-100 ;CP-1508-22), Mobil NV 28, 3913-GI (M/s Syn USA), Anderol 786 (M/s Tenneco Chemicals Inc USA), Aerzen Lube-06, Marlotherm SH, BAFCO Hydraulic Oil / BAFCO SPEC: 946, CPI 4600-10 / CPI 4600-68, KLUBER Summit 30, Heat Transfer Fluid (DTA), Extruder Hot Oil, HITEC - 5708 / HITEC 566, IRGALUBE 349 / 353/ ML 3010 A, IRGAMET 39, Additives^{C1}, Marine Additives^{C2}, Group 1 / 2 / 2 plus / 3 / 3 plus / 4 / 5 /Esters/Napthanic series of all viscometrics, PIB's of all Molecular weights, Paving Grade BITUMEN.
- D. **PLANT EQUIPMENT AND MATERIALS:** Compressors^{D1}, Speciality Valves^{D2}, Special Pumps^{D3}, Special Equipments^{D4}, Special Accessories^{D5}, Pilot plants, Speciality Laboratory and R&D Equipment, Project Equipments^{D6}, Sea Water RO membrane, Low Fouling Composite RO membrane; Marine Unloading Arms-including spares & services, AMC; Tank roof drain hoses for floating roof tanks; Cold box; PDH Reactor Catofin Valves;
- E. **SPECIALTY LABORATORY AND R&D EQUIPMENT:** Reference fuels^{E1}, Gas Chromatograph for analysis for Quality Control / R&D^{E2}, Spectrophotometer^{E3}, Lab

Analysers^{E4}, Lab Apparatus^{E5}, Massflow controller^{E6}, Colour (Saybolt), Knife mill, Molecular Size Ball Milling machine; Non-space pumps for dispensing of Petroleum products in Retail Outlets; Melt Flow Indexer as per ASTM D 1238 Procedure A,B,C & D (Multi Weight Tests); Wavelength dispersive X-Ray/ Fluorescence Spectrophotometer; Tensile tester as per ASTM D 638, 882,1822; Lab scale Extruder with pelletizing Equipment

- F. **INSTRUMENTATION AND AUTOMATION:** Instrumentation Equipments for process Industry^{F1}, Process Instrument Analysers^{F2}, Anti surge controllers, Control system (licensor / OEM supplied Mandatory), Transmitters^{F3}, Temperature sensor for Main combustion chamber in Sulphur Recovery Unit, Reactor/Regenerator Bed Multipoint Thermocouples, Ex-proof CCTV system for Refinery process units, Tank RIM Seal Protection Instruments - LHS Detection System, IT/OT interface procurement - Firewalls for OT protocols and DCS / PLC system Continuous Threat Detection Software; Electrostatic Probes
- G. **MATERIAL FOR CRUDE AND PRODUCT PIPELINE:** PIG Valves, Submarine cables, Mass flow / Ultrasonic Meters, Intelligent pigging of Pipelines, Anchor Mooring Chains and Hardware, Sub-Sea Bop Control Hose Bundle, Buoyancy Module Risers, Life Buoy With Life Buoy Light & Life Line, Mechanical Pipeline End Connectors (Weld Plus End Connectors), Pipeline Coating Materials (Cold Applied Tape); Calibration of Master flow meters
- H. **PETROCHEMICAL SPECIFIC SPECIALIZED EQUIPMENT & COMPONENTS:** Extruder and pelletizer Package, Cutter Blades of Extruder, Bagging and Palletising Plant, automatic storage and retrieval system for petrochemical warehouse, bulk loading dispenser system, Radiant Coils & its spares for SRT, Slurry Feed Pump, Melt Pump, Additive Mixing Vessel incl. Mixers, Agitator for Catalyst Metering Vessel, Agitator for Catalyst Preparation Vessel, Agitator for Reactor incl. drive, Waste white oil agitator, Crystalliser, Belt dryer, Carrier Gas compressor, Recycle Gas compressor, Pneumatic conveyor, Membrane unit, Bag additive Discharge system, Canned Pumps, Short Stop, Kneader Reactor; Cast film extruder with facility of twin direction orientation; Automatic Compression Moulding (Hydraulic press); Slurry Catalyst Injection port and Catalyst Injection Port Drilling Assembly; Pressure Tap Drilling Assembly; Catofin Reactor Evacuation Ejector; Waste Heat Boiler with Selective Catalytic Reduction (SCR); PDH Reactor Bricks- Catalyst Support & Others and Reactor Refractory; Pressure balance length compensator and its spares
- I. **FIRE-FIGHTING AND SAFETY EQUIPMENT:** Hydraulic platform for rescue and firefighting, fire proximity suit, Blast resistance modules, Fire Alarm System.
- J. **SINGLE POINT MOORING COMPONENTS:** Floating hoses, subsea hoses, SPM end shackles, SPM speciality valves (8" and above butterfly valves / 24 inch Subsea valve), SPM Mooring Hawser, Anti chafe chains, Support Buoys, Weld Plus End Couplings, Marine Breakaway Couplings, Umbilicals, Camlock Couplings, Load Pin Assembly, Expansion Joints, special Butterfly Valves (procured with Hoses), MIC testing kit, PLIDCO Flange Repair Ring, Sealant for Offshore Clamps, Hydraulic Power Units Spares for Offshore, Crude Oil Blending unit, Auto Samplers, Electric Resistance Probes (ER Probes), Inspection of unpiggable Pipelines using other intrusive/non-intrusive inspection technologies, In-Line Inspection of Piggable Pipelines, Inspection of un-piggable Pipelines using other intrusive/non-intrusive inspection technologies, In-Line Inspection for "difficult to inspect" and "non-piggable" pipelines, Pipeline Safety and Integrity related jobs: Integrity Inspections using In-Line Inspection (ILI) of pipelines by MFL / EMAT / UT techniques, Pipeline Safety and Integrity related jobs: Integrity Inspections using In-Line Inspection (ILI) of pipelines by Large Stand-off Magnetometry, Phonon and other

emerging technologies, Marine Breakaway Coupling Floats, Mooring Bridle Chain, Hydraulic Power Unit, Telemetry Unit and its Spares, Offshore Pipeline Clamps; Wheel Assemblies; Rail Track Assemblies; Docking and Mooring System¹¹.

K. **LPG, LNG AND OTHER HYDROCARBONS:** to meet domestic supply shortfall (where supply is not enough to meet the domestic demand of the particular hydrocarbon)

L. Licensor Mandated Items

M. **Bio-Refinery Catalyst and Yeast:** Cellulosic Enzyme, Cellulosic Yeast.

N. **SERVICES:**

1. Engaging Process Licensors: Supply of License, basic design and engineering package and assistive services for new Refinery & Petrochemical Units, Bio Refineries and revamp projects
2. Specialized Consultancy services: Refineries / Bio Refineries, CNG, due diligence and evaluation of overseas acquisition - legal, financial, taxation, technical etc.
3. Database subscriptions, Market Intelligence Tools, specialized services related to upstream services of E&P including Training from foreign firms.
4. Specialized Technical Services and Training Subscriptions
5. Specialized Software Services and their AMC (including for upstream E&P Industries like G&G services, Reservoir Simulation, Estimation, Modelling, software for R&D purpose, Asset Integrity Management, Process Simulation)
6. Benchmarking Study
7. Umpiring / Assaying services for chemicals and catalysts
8. ASTM Proficiency Testing for Labs
9. Scale up studies^{1,1}
10. Pipeline Intrusion detection warning system
11. SPM Services
12. Consultancy for Offshore Pipeline
13. Refurbishment of PLIDCO Flange Repair Ring
14. Integrity assessment of non-piggable pipelines
15. Chartering of ships^{1,2}
16. Database subscriptions, Market Intelligence Tools, specialized services related to E&P including Training from foreign firms
17. Consultancy for Onshore Pipelines
18. In-Line Inspection for Crack Detection in pipelines
19. In-Line Inspection for "difficult to inspect" and "non-piggable" pipelines
20. Services of crack growth analysis of coke drum knuckle joint area and other critical equipment
21. Services of laser scanning and mapping of coke drums
22. Services of overseas OEM authorized Maintenance Repair and Overhaul Centers(MROCs)/Authorized Maintenance Centre(AMC) for various equipment like Overhauling of Siemens Make (RB211 24 GT DLE/ RB211 24 G/KC-05/KB-05) gas generator, Make: Rolls Royce (Presently known as Siemens), Power turbines, Compressors & other ancillaries etc.)
23. Telescopic Marine Gangway

Reference List:

Reference	Eligible items
A-1	<ol style="list-style-type: none">1. CRU / CCRU Reformer Catalyst2. Reformer Catalyst3. Pre reformer catalyst4. R 264 Catalyst5. Platforming Catalyst6. Tatoray catalyst and Reforming catalyst
A-2	<ol style="list-style-type: none">1. Platforming and NHT catalyst2. Hydro treating catalysts3. CHTU Main catalyst4. DeMet & Grading catalysts
A-3	<ol style="list-style-type: none">1. HCU2. OHCU catalysts
A-4	<ol style="list-style-type: none">1. Claus Catalyst2. SRU Catalyst3. TGTU catalyst4. Selectox Catalyst
A-5	<ol style="list-style-type: none">1. Fluidized Catalytic Cracking catalyst2. PFCCU Fresh catalyst3. RFCC Catalyst
A-6	<ol style="list-style-type: none">1. Merox catalyst2. Mercaptan Scavengers3. SKO/LPG Merox Catalyst
A-7	<ol style="list-style-type: none">1. ISOM Catalyst2. Bensat Catalyst3. Penex catalyst4. Butamar / SARU catalyst
A-8	<ol style="list-style-type: none">1. Isodewaxing catalysts2. Hydrofinishing catalysts3. Hydrodewaxing catalysts
A-9	<ol style="list-style-type: none">1. Benzene hydrogenation Catalyst2. PTA Hydrogenation catalyst3. SHU (Selective Hydrogenation Unit) & HDS (Hydro Desulphurisation Unit) catalyst4. C4 TOTAL HYDROGENATION Catalyst5. Selective Hydrogenation Catalyst6. Pyrolysis Gasoline Selective Hydrogenation Catalyst (DPG-2)7. Pyrolysis Gasoline Selective Hydrogenation Catalyst (DPG-1)8. HGU PDS Catalyst (Si absorber + 1st hydrogenerator) catalyst9. DPG-2 REACTOR CATALYST10. MAPD CONVERTER CATALYST G-68HX, OLEMAX-35311. Acetylene Converter Catalyst12. Propane Dehydrogenation Catalyst, Catofin Reactors
A-10	<ol style="list-style-type: none">1. FGTU SHU Reactor catalyst2. Hydro-desulfurisation catalyst3. FGTU HDS catalyst (MCN, HCN Main & Finishing catalyst)
A-11	<ol style="list-style-type: none">1. HDPE Catalyst2. Isomerization Catalyst3. Shift-Reactors Catalyst4. Ziegler natta catalyst

5. Non-Aromatic catalyst
6. Poly Propylene Catalyst
7. PRU Arisenic Bed Catalyst
8. PX NHT Catalyst
9. AT / CT / Tri Ethyl Aluminium (TEAL) catalyst
10. CAB Catalyst
11. CAB2 Catalyst
12. LAB PACOL catalyst and Molex adsorbent
13. LC 2253 and Axsorb 541 Butene-1 catalyst
14. Petrochemical catalysts
15. MAPD Converter Catalyst
16. PP Mix Moisutre removal bed (Dryer) Catalyst
17. Oxygen Converter Catalyst for ERU
18. Ethylene Sulphur guard (ZnO) catalyst
19. Ethylene Oxide Catalyst (silver based) for MEG unit

- A-12
1. CJ Co-catalyst for LLDPE/HDPE Swing Unit
 2. CD (DEAC) co-catalyst
 3. TnHAL (50% diluted in Hydrobrite 380 White Mineral Oil)
 4. DE-AC (13% diluted in Hydrobrite 380 White Mineral Oil)
 5. Petrochemical CO Catalysts

- A-13
1. CCR Net gas chloride treater catalyst
 2. Chloride Guard Catalyst
 3. Sulphur Guard Catalyst
 4. FGTU Chloride guard bed catalyst
 5. ISOM-sulphur guard
 6. LPG chloride treater catalyst

- A-14
1. Hydrogen Methanator catalyst
 2. METHANATOR Catalyst
 3. C2H Catalyst (Back End) for Gas Cracker Unit
 4. C2H Catalyst (Front End) for Gas Cracker Unit

- A-15
1. catalyst guard bed
 2. Denstone Inert ceramic balls
 3. Purification Catalyst (Refractory Balls)
 4. Alumina support with sodium (<10 ppm)
 5. Pseudoboehmite with maximum <10 ppm sodium content
 6. Alumina spheres
 7. CO2 adsorption supports
 8. Support balls
 9. Refractory Balls
 10. Causticised Alumina
 11. , Alumina
 12. Silica
 13. Silica-Alumina
 - 14 Zirconia
 - 15 Silica-zirconia
 - 16 Titania
 - 17 Titania-Silica

- A-16
1. HGU PSA Catalysts
 2. Adsorbents (HGU PSA Adsorbent)
 3. ISOM Make up gas drier adsorbents
 4. TREATER ADSORBENT
 5. Metals Treater Adsorbent

	6. NIU (Naphtha Isomerisation Unit) Offgas drier adsorbent 7. Dryer Treater Adsorbent 8. NIU Off-gas drier adsorbents 9. Dryers/ Treaters - Adsorbents 10. H2 PSA Adsorbent 11. FCC C3s Arsine treater adsorbent 12. Syngas Adsorbents 13. FCC C3s Dryer Adsorbent
A-17	1. Zeolites 2. Zeolite based Catalysts
A-18	Molecular sieves of different sizes (Na-Y,H-Y, Re-Y, USY & Re-USY and ZSM-5, Zeolite-A, Zeolite-X, Zeolite-5A, 1A etc) PRU drier molecular sieve PPU drier molecular sieve Inert Grain for Catofin Reactor Molecular Sieves for Product Gas Dryer Molecular Sieves for De-ethanizer Feed Gas Dryer Molecular Sieves/Adsorbent Propylene product dryer & Treater bed Alumina Balls 8mm & 19 mm for Catofin Reactors
B-1	1. Specific high purity silica gel used in SWING unit 2. Sorbead WS 2050 (Hexane adsorption fixed bed for moisture removal)
B-2	1. DONOR-C - Cyclo-Hexyl Methyl Methoxysilane 2. Donor - D - Di-Cyclo-Pentyl-Di-Methoxy-Silane
B-3	1. Peroxide-101 2. Luperox 101
B-4	1. Bottom Cracking Additive 2. CO Promoter 3. Multi Functional Additive for Gasoline
B-5	GMS- 90 (Glycerol CT-stearate) Anti Static Additive
B-6	AO 1330, AO 1010, AO 1076, AO8, Irganox 1010, Irgafos 168, AO9, AO 1076, AO 168, AO06, Phosphite 168, Pep Q; Primary Antioxidant AO 3114
B-7	Inuvin 622 FF Tinuvin 326FL Cyanox 2888 Cyasorb 531 UV-12-Hydroxy-4-n-octoxybenzophenone UV Stabilizer UV stabilizer 622 Chimasorb 944 UV 944 UV-4 Cyasorb THT 4801-Pastilles
B-8	AK stabilizer , Irganox 1076 FD, Irganox 1010FF, Irgafos 168FF, Irganox B225FF, Songnox 1680FF, Songnox 1010FF, Songnox 1076 SB, Alkanox 20 Gr, A06, A08, A09, Alkanox 240 Gr, Anox PP 18, Songnox B215FF, Songnox 11B FF, Songnox21 B FF , DSTDP, AJ Stabilizers, Preblend stabilizer
B-9	Tale (ABT-2501) Optiblock 8 Optiblock 10

B-10	Erucamide Armoslip EL Crodamide ER Finawax ER Slip Agent Oleamide
B-11	DHT 4A / Hycite
B-12	PD (2,4 Pentanedione) Deactivator PG (Pelargonic acid) deactivator
B-13	1. Activated MDEA 2. CITRIC ACID 3. Cu Impregnated Active Carbon 4. Di-methyl Di-Sulphide (DMDS) 5. Methanol 6. Antistatic Additive for ATF(for conductivity improvement) 7. Mono-2-ethyl hexyl amine 8. Neutralizing Amine 9. Perchloroethylene
B-14	1. Calcium Stearate Masterbatch 2. Silica Stearate Masterbatch 3. Master Batch Additives 4. Calcium Stearate
C-1	LZ - 5172; LZ - 859; LZ - 889 D; LZ 5941; MAK OILAD (122B10; 124D05;125E13; 125E24; 125E25; 133C14; 142B14; 142B16; 143C29;145E26; 153C08; 153C09; 154D00; 154D01; 173C08; 174D00; 174D01; 212B01; 212B05; 213C11; 214D01;215E03; 218H01;225E01; 227GO3;245E01; 263C02; 264D0 1;265E01 ;265E06; 267G01; 312B04; 2B05;315E01;315E02; 315E03;315E04;315E06;315E08;315E10; 315E12; 319I03; 322B02; 322B03; 322B04; 322B05; 322B06; 322B08; 325E03;325E04; 332B01; 332B02; 332B04; 332B08; 332B09; 332B10; 332B11; 333 C02; 334D01; 334D02;335E02;335E03;335E06; 335E09; 411A01; 418H03; 421A01; 421A02; 426F01; 428H01; 428H03; 428H04; 44 8H11; 449I12; 451A00; 472B02; 479H01;5350E01; 536F00; 5450E01; 546F00; 559I02; 559I04; 572B01; 591A01; 592B01; 92B02; 595E01; 596F01; 712B03; 731A01; 746F01; 799I08; 799I15; 799I16; RC 4801
C-2	MAR 489 S- USD 22998; MAR 501 S-- USD 14034; MAR 730P - USD 22543; MAR 363 P- USD 12189; DISOPAC - USD 14598; A 127070- USD 18488; MAR 918 U- USD 12682;MAR 425S; MAR 333C;MAR 502S;MAR 515U;TALUMAR B;MAR 728 U;MAR 489S; MAR 636 P/MAR 363 P/MAR 730 P; MAR 503 S; TALUMAX B;MAR 728;TALUMAX;A 127070;INF7032/7049/7048;INFENIUM M SERIES OF ADDITIVES FOR MARINES; OLOA 50700;OLOA 48002;OLOA 49805;ORONITE THAME SERIES ADDITIVES FOR MARINES;MAR 918 U, MAR / MAR P SERIES , DISOPAC, TALUMAR B , TALUMAX , INFENIUM/ INFENIUM M SERIES , OLOA SERIES , LZ SERIES / HITEC SERIES
D-1	Process gas compressors (Tail Gas Compressor / CO2 Recycle Compressor / Vent Recovery Compressor / Cycle Gas Compressor and Turbine / Double diaphragm Hydrogen Compressor/ Nitrogen Compressor/Propylene Compressor / Ethylene Compressors), Axial Compressor (Regeneration Air Compressor), Expander compressors for cryogenic process, Diaphragm Compressor- Hydrogen Compressor, Ethylene Compressors package, Membrane Compressors package, Multi-stage heat pump compressor; Product Compressor; Head low Flow Centrifugal Pumps (OH6 type- Sundyne)

D-2	<p>Surge Relief Valves Slide valves (SCSV, RCSV & DDSV) Check valves (exotic metallurgy / dual plate / swing type /duplex) Angle control valves On -Off Butterfly valves control valves Ball valves of Duplex Alloy 276 Check valves (exotic metallurgy / dual plate / swing type /duplex) Actuated Valves on safety -critical trip duties Fire safe shutdown valves Valve Interlocks (for process safety) Rotary tight shut off valve API-6D Underground Ball Valves with Extended Stem Pressure Balance Plug Valves Twin Isolation Plug Valves Surge Relief Valve Rising stem On-Off valves Special Control Valve (Flush Bottom) Self-actuated flow control valves Coal feed Flow Control Valves (including actuators) Control / safety Shutdown / Pressure relief valves having seat leakage class VI. Valves with exotic metallurgy trims and internal Auto Drain Valve for draining water from crude tank/ slop tank Product Discharge System valves Purge Blowback System Multiport Ball Valve 3 Way-Divertor Valve</p>
D-3	<p>High Pumps (Submersible Pumps for LPG and Water Service for caverns / Head Low Flow Centrifugal Pump / Slurry Feed Pump / Propylene Charge Pump & Recovered Propylene Pump / In-tank retractable pumps for Refrigerated LPG Storage) Additive Pump API 610 Centrifugal Pumps Diaphragm Pumps Electrostatic Pumps GTU Pumps High head low flow Pumps integrally geared, heavy duty and single stage overhung Pump Propylene Charge Pump Pumps- Slurry Feed Pump</p>
D-4	<ol style="list-style-type: none"> 1. A.C. VARIABLE SPEED DRIVE / VARIABLE FREQUENCY DRIVE (VFD) 2. Automatic Bottom & Top un-heading device 3. Coke Cutting System for delayed Coker Unit 4. Burners for Process Heaters 5. Motors above 4 MW rating 6. Automatic backwash Feed Filter Package 7. Rotary Mixer package 8. Agitator (high pressure /high velocity with duplex SS tie rods and special metallurgy components) 9. Reactor Internals 10. High specific volume Steam turbine (condensing type) above 6 MW 11. Screw conveyors (Nitrogen sealed and thermally insulated by steam type screw conveyor)

12. Agitator (high pressure /high velocity with duplex SS tie rods and special metallurgy components)
13. Acrylic acid purification unit
14. Brazed Aluminium Plate and Fin Exchanger
15. Desalter system
16. Knife Mill
17. Automatic-Drum Filling Machine suitable for hazardous area classification Zone IIA/IIB
18. Welded type Plate Heat Exchanger
19. Wobbe Meters
20. Waste Heat Boiler with SCR package
21. Polymerization kneader reactor
22. Pre Contacting pot agitator with vessel and Catalyst mixers
23. PSA Hydrogen Package
24. Plant Lifts (Hazardous area and flameproof)
25. Resin Additive Handling System.
26. Furnace Monitoring System
27. Aluminium Plate Fin Heat Exchanger (ALPEMA Standards)
28. SPIRAL TYPE HEAT EXCHANGER
29. BAYONET TYPE EXCHANGER

- D-5
- Hydrogen Reformer Tubes
 - Air Grid Nozzles for regenerator
 - CATOFIN Reactors
 - CCR Screens, scallops, Duro-lock assembly
 - Coalescer for Aviation
 - Corrosion monitoring system
 - CYCLONES (REACTOR & REGENERATOR)
 - Flow dividers and distributors for GTGs
 - Special Pipes, Valves and Fittings (cladded/ gre/ exotic metallurgy like Alloy 625 Alloy 825/ Titanium)
 - 13 Chrome Premium Casing of all grades
 - CRA Premium Casing of all grades

- D-6
1. Switching Valve (Delayed Coker Unit)
 2. Bridge Crane (Delayed Coker Unit)
 3. HP Centrifugal Separator- Vendor Proprietary Design
 4. Hydraulic Tube Bundle Extractor
 5. Catalyst Transport Pump (Reciprocating Pump designed as per API 674)
 6. Asphaltene Pump (Screw Pump designed as per API 676)
 7. Pitch Solidification Package
 8. Ebullating Pump for Reactor
 9. Clamped or Bolted Seal Ring Connectors for HP Piping
 10. Reactor Static Mixture.
 11. SDA Unit Internals
 12. Y type Ball Valve for Let Down Skid
 13. Integrated Start-up Burner (including ignitor, insertion mechanism and flame detectors/ monitoring units)
 14. Sluicing Valves in coal feed and slag lock hopper systems (including actuators)
 15. Coal feed Flow Diverter Valves (including actuators)
 16. Gas Injection Devices for Pulverised coal system (including pressure part)
 17. Pipe Aerators and Pick-ups for pulverised coal system (including pressure part)
 18. Coal Mill
 19. Pre-Drier

	<p>20. Slag Crusher</p> <p>21. Slag Dewatering Silos and Drag Chain</p> <p>22. Slag fine Decanter</p> <p>23. Electric Furnaces</p> <p>24. Dispersed Oil Extraction unit</p> <p>25. LNG Truck loading arms</p> <p>26. Thermal Oxidiser</p> <p>27. Screw Conveyers for Petrochemical Plants</p> <p>28. Prilling Buckets for Fertilizer Plants</p> <p>29. Prilling Bucket Support machine for Fertilizer Plants</p> <p>30. Rotary scraper for Fertilizer Plants</p> <p>31. Bulk Flow cooler for Fertilizer Plants</p> <p>32. Acidic Scrubber Package for Fertilizer Plants</p> <p>33. Urea Screen (Vibrating type) for Fertilizer Plants</p> <p>34. Air heaters for Granulation unit in Fertilizer Plants</p> <p>35. Coker Bridge Crane</p> <p>36. Automatic Bottom & Top Unheading device</p> <p>37. Coke Cutting system for DCU</p> <p>38. Slurry (CLO) Automatic backwash filter package for FCC Unit</p>
E-1	T fuel / U fuel / Iso Octane / n heptane ASTM Grade Iso-Octane ASTM Grade n-Heptane, ASTM Grade Toluene, Cetane High Check Fuel, Cetane Low Check Fuel, ASTM 80 Octane Ref. Fuel etc
E-2	<p>Gas Chromatograph (testing of Refinery Gas and Propylene samples / Benzene Purity / Methyl tert-butyl ether (MTBE) analysis / DHA / SCD etc)</p> <p>High Performance Liquid Chromatograph (HPLC)</p> <p>Ion Chromatograph</p> <p>Combustion Ion Chromatograph (CIC)</p> <p>Liquid Chromatography with Mass Spectrophotometric detector</p> <p>Gas Chromatography with Mass Spectrophotometric detector</p> <p>Gas Chromatographs (SimDist with Front End DHA and Fuel Dilution)</p> <p>GC with Vacuum ultraviolet spectroscopy (GC-VUV)</p> <p>GC with Electron capture detector (GC-ECD)</p> <p>GC with Plasma Emission detector (GC-PED)</p> <p>Gas chromatography with triple quadrupole mass spectrometry(GC-MSxMS)</p> <p>GC for MTBE and Benzene purity</p> <p>GC for phenols</p> <p>GC Reformulyzer</p> <p>GC-SCD system</p> <p>Methanizer GC</p> <p>Thiophene GC</p> <p>Sulphur speciation GC</p>
E-3	<p>UV-VIS Spectrophotometer</p> <p>Color View spectrophotometer</p> <p>Inductively Coupled Plasma-Optical Emission Spectrometer (ICP-OES)</p> <p>X-Ray photoelectron Spectrophotometer</p> <p>X-ray Absorption Near Edge Spectrophotometer</p> <p>Fluorescence Spectrofluorometer</p> <p>FT-IR Spectrometer (Near / Mid / Far)</p> <p>FTIR Spectrophotometer</p> <p>Liquid chromatograph with triple quadruple mass spectrometer</p> <p>NMR (Nuclear Magnetic Resonance) spectrometer</p> <p>Raman Spectroscopy</p>

Temperature programmed desorption unit with mass spectrometer

E-4	<p>Auto Salt in crude analyser Biological oxygen demand (BOD) analyser & Chemical oxygen demand (COD) analyser Portable fuel Analyzer (IROX) Portable Auto Dew Point Analyser Automated Freezing Point Analyzer Benzene analyser Particle Counter Analyzer for Aviation turbine fuel (ATF) Nitrogen and Sulphur Analyser Trace Nitrogen Sulphur analyser Energy Dispersive X-Ray Fluorescence (EDXRF) Analyzer Total Sulphur Analyser Drop Shape Analyser UVF Sulphur Analyzer Stability analyser for residual fuel Online Distillation Analyser carbon and sulphur analyser Trace chloride analyser PIONA analyser Refinery Gas analyser GC Online Gas analysers Particle Size Analyzer BET Surface Area Analyzer for Microporous Mesoporous & Macroporous catalyst powders Breakthrough Analyser CHNS Analyzer CHNS/O – Analyser Crude Oil Stability and Compatibility Analyzer (Porla Analyzer) Differential Thermal Analyser Dynamic Foam Analyzer Gravimetric adsorption analyser H₂S Analyser High Pressure Adsorption Analyser High Pressure gravimetric adsorption analyser High throughput N₂ adsorption analyzer High Pressure volumetric adsorption analyser High throughput N₂ adsorption analyzer Multi-Gas Analyzers (Infrared & Tunable Diode Laser based)</p>
E-5	<p>Accelerated Rate Calorimetry (ARC) Aromatics & Olefins Apparatus (FIA) ATF Conductivity Meter Auto Abel Flash Point Apparatus Auto COC Flash Point apparatus Auto colorimeter Auto density Meter Auto Distillation Unit Auto freezing point Auto Oxidation Stability Apparatus for MS & HSD Auto- Penetrometer Auto PMCC Flash Point Apparatus Auto Pour & Cloud Point Apparatus Auto pour point Auto RVP apparatus</p>

Auto Smoke point Apparatus to test Smoke Point of ATF (Aviation Turbine fuel)
auto softening point
Auto Softening Point Apparatus
Auto Vacuum distillation
Automated High Frequency Reciprocating Rig Lubricity Evaluator (HFRR) lubricity apparatus
Automatic asphaltene content apparatus
Automatic CFPP apparatus
automatic freezing point apparatus
Automatic PMCC and Abel flash point test apparatus
Autotitrators for potentiometric and Coulometric analysis
Battery Cyclers
Bitumen ductility apparatus
Cold cranking simulator equipment
Colorimeter
Computed Tomography Equipment
Conductivity Meter for ATF
Continuous paddle dryer Syrris
Continuous ring-layer Mixer
Electrode Slurry Mini-coater
Field Emission Scanning Electron Microscope
Flash Point (COC Test apparatus)
Fuel Cell and Accessories
Fuel Cell Test Station
Fuel Cell Testing Machine
Fully automated Ball-On-Cylinder Lubricity Evaluator (BOCLE)
Gamma emission Tomography
Glassware Corrosion Test Equipment
Glassware Corrosion Test Apparatus
Heated Centrifuge Machine for testing of Crude
High pressure gas fittings and regulators.
HP Catalyst Screening Unit
Hydrogen Dispenser
Indiana State Oxidation Tester (ISOT)
Inductively Coupled Plasma Apparatus for Metal Analysis
Jet Fuel Thermal Oxidation Tester (JFTOT)
Karl Fisher Coulometer
Karl Fisher Coulometer for water and moisture content
Metrological Tube Rater
Metrological Tube Rater (JFTOT) – ITR/ ETR
Micro Carbon Residue Tester
Micro Carbon tester
Micro distillation
Microbubbles Free Electrode Planetary Slurry Premixer
Micrometer Range Electrode Coating Machine for Battery Current Collectors
Micron Range Battery Electrode Roll Pressing machine
Microwave ashing furnace
Microwave-digestion system
Mini flash point test apparatus as per D6450/D7094
Multiparameter tester for water
Neutron Tomography
Online Conductivity Meter for ATF
pH monitoring Wet Gas meter

Portable Particle Counter
 Programmable Battery Electrode Slurry Machine
 Programmable Multi-electrolyte (Flammable) Filling Machine for Rechargeable Batteries
 Programmable Slitting machine for Micrometer Thickness Battery Current Collectors & Electrodes
 Rechargeable Battery Anode -Cathode body Crimping & Grooving
 Refractometer for testing of DEF/ Adblue
 Rotameters
 RTFOT
 Shear stability tester
 Smart Quenchometer
 Stabinger Viscometer
 Stabinger Viscometer (Automatic)
 TAN/TBN apparatus for quality control
 Tensiometer
 TEOST (Thermo Oxi Eng oil simulation test)
 Thermic fluid of heating and refrigerated units
 Turbiscan TLAB Expert
 Viscometer cleaning apparatus
 Wavelength Dispersive XRF
 Winding Machine for Battery Anode-Cathode-Separators with Inter-layer Resistance
 WSIM for ATF

E-6 DFC digital mass flow controller
 DPC mass flow controller
 Mass flow controllers

F-1 TETRA System
 Speed Transmitter
 Drum Level Instruments (Electronic)
 Pipeline intrusion detection system (OFC based)
 Automatic liquid sampler
 Dry colorimetric (tape) detectors
 Meter provers
 Pipeline Leak detection system (Negative Pressure wave type)
 Coal Mass Flow Measurement System
 Aeration Cones for Pulverised Coal Systems
 Vibration Monitoring System
 Nucleonic Level measurements system
 Meterological Control system for meter prover and its services

F-2 Moisture Analysers
 Water cut analysers in desalters
 H₂S Analyser in sulphur recovery unit
 Tail gas analyser in sulphur recovery unit
 Feed gas Analyser in sulphur recovery unit
 H₂ / COS analyser in sulphur recovery
 Analyser in Stack & ambient air quality measurement for Sox/NO_x/CO/Ozone/VOC/PM
 2.5/PM 10/Opacity
 Water quality analysers like COD / BOD / Turbidity / TOC
 Slide Valve in RFCC units
 Product Sulphur analyser
 NDIR analysers used in auto blending applications
 Flash point analyser
 Oxygen Analyser

	<p>Hydrogen purity Analyser Ambient air analyser systems Analyser (air demand/total sulphur) Analyser-density/sp gravity (coriolis) Analyser-density/sp. Gravity (nucleonic) Analysers (hydrogen sulphide) Analyzer so2 Feed line sulphur analyzers Process stream analyser (H.C.-TCD/FID) Process stream analyser (IR/UV) Process stream analyser(HYDROGEN-TCD) Process stream analyser(IR/UV) Process stream analyser(PARAMAGNETIC-O2) Process stream analyser-Moisture/ Dew Pt Product quality (Sulphur) Product quality analyser systems Product quality analysers (Density) Product quality analysers (Distillation) Product quality analysers (Flash Point) Product quality analysers (NIR) Product quality analysers (RVP) Product quality analysers (Viscosity) Stack gas analyser systems (Extractive) Stack gas analysers (O2-Zirconia) + Co + Co2 Opacity analysers TDLS analysers</p>
F-3	<p>Radar & Servo Level Transmitter Hydrastep Level Transmitter ULTRASONIC FLOW TRANSMITTER</p>
J-1	<p>a. Quadruple & Triple Quick Release Hooks Unit and integral Capstan. b. Load monitoring System for QRH Units. c. MLM interface for Ship Shore Link d. Electrical Remote Release System for QRH units e. Environmental monitoring System f. Docking Aid System g. Portable Marine Monitor Unit h. Carry onboard Unit i. Central Monitoring System with DCS interface</p>
N-1	<p>Scale up studies (Except where Services/ Technology catered by domestic Institutions)</p>
N-2	<p>Chartering of ships (There are Indian Shipping lines available, but these are insufficient to meet the domestic demand. However in any case Indian vendor has the option to match foreign L1</p> <ol style="list-style-type: none"> Voyage Charter, Contract of Affreightment (COA) and Time Charter of vessels for import/ coastal transportation of (a) Crude oil, (b)LPG & (c) LNG Voyage Charter, Contract of Affreightment (COA) and Time Charter of vessels for import/ coastal transportation of petroleum Products

Upstream sector related items

Materials/Equipment:

- A. **Tubulars:** All Type of Casing & Crossovers with Premium Thread Including Chrome, Flush Joint for HPHT application & CRA Casing and accessories, Odd sizes casing accessories and cross overs; flush joint casing and accessories, Short Drill Pipe, Drill Collar with premium thread connection, Heavy Weight Drill Pipe , All Type of Tubing With Premium Joint & Crossovers, Vacuum Insulated Tubing.
- B. **Cementing Equipment / Chemical:** Cement Additives, Cement Retainers For HPHT Operations (All Sizes), Cement Support Tool (All Sizes), Cementing Unit, Special Oil Well Cement For HPHT Well (Dykerhoff Cement), Expandable Liner Hangers (All Sizes), External Casing Packers (All Sizes), Hydraulic Stage Collar (Cementing) of High Grade For Above 300F, Microfine Cement, Subsea Cementing Plugs (All Sizes) with Cementing Head For Floater Rigs Cement Test Equipment viz., HTHP-Curing Chamber, HTHP-Consistometer, Waring Blender-Constant Speed Mixer, Static Gel Strength Analyzer and Wettability Tester. Cementing Head with plugs, Batch Mixer, Atmospheric Consistometer, HTHP-Consistometer, Ultrasonic Cement Analyser, Stirred Fluid Loss Apparatus, Static Gel Strength Analyzer and Wettability Tester, Mechanical Property Analyzer.
- C. **Drilling/Rig Equipment & Tools:** Advanced Drilling Instrumentation System, Control Panel For Power Pack - Offshore, Core Barrel, Dead Line Anchor, Diaphragm Operated Shutoff Control Valve, Draw Works Eddy Current Break, Drilling Handling Tools, Well head Isolation tool/Tree saver Hole Opener & Hole Reamer, Hydraulic & Pneumatic Spinner, Mud Handling Equipment, Pipe Racking System, PDC / Premium Bits, Rig Communication System, SDMM Mud Motor/Down Hole Motor, Top Drive System / Drill Hook, Kinetic Energy Management System, Refrigerated type air dryers sea water cooled, Fishing Tools, Rotary Substitutes, Drilling jars, intensifiers, shock sub, rotary, Swivel, Roller Reamer, key seat wiper, Tubing stripper, Drilling simulator, Hot Tapping and Valve Drilling machine up to 5000 psi, 26" TCR Bits, Rotating Scrapper, Casing Spider, Tong line Line Pull and Load Cell Assembly, Internal Casing Cutter, Casing Clamp, Wellhead Sampling Kits, Solid Control Equipment.
- D. **Geophysical Equipment:** Field Processing Unit, Global Navigation Satellite System, Specialised Geological, Chemical and R&D Lab Equipment, Seismic Data Acquisition System, Shooting System for Seismic Data Acquisition, Seismic Data Processing / Imaging Software, Tape Drive Unit, VSP Data Acquisition System, VSP Processing Software. Seismic Survey Designing software, Seismic Data inversion, Interpretation & reservoir studies software, Techno economics software.
- E. **Plant Material/Equipment:** Process Gas Compressors-Screw, Expander Compressors for Cryogenic Process, Ethyl Mercaptan, specialized Laboratory Equipment for Hydrocarbon and Chemical Testing & Analysis, including Software Solutions for R&D in Oil & Gas Production, Exploration. transportation and Energy Sector Research, Aqueous Sulpholane (aqueous Sulfolane), Source Rock Pyrolyzer.
- F. **Instruments & Guages:** Borescope Unit - TG/PGC, Weight Indicator, EMR Gauges, Thermocouple for Downhole Temperature, Specilaized lab equipment for petrophysical lab, Pressure Volume Temperature (PVT) lab and Bottom hole data acquisition lab Equipment/ Reservoir studies lab equipment, Downhole Pressure & Temperature Gauges , Cold Finger Apparatus, Ageing Cell, Automatic Imbibimeter, Tong Line Pull Gauge, High Accuracy Oil Field Pressure recorder , Battery operated digital Oil Field pump stroke counter system, Digital Well analyzer (Echo meter).
- G. **Mud Chemicals/ Items:** Potassium Formate, Hollow Glass Sphere (Gr-IV& HGS4K28), Rheometer/ Viscometer. XC Polymer and its derivatives, Polyanionic

Cellulose (all grades), Microbubble low density fluid, Nanotechnology based /High performance lubricant, Linear Swell Meter, Potassium Chloride, Specialized Loss Circulation Control Materials.

- H. **Offshore Equipment:** Anchor Mooring Chains and Hardware, Sub-Sea Bop Control Hose Bundle, Buoyancy Module Risers, Life Buoy With Life Buoy Light & Life Line, Marine Riser System & Handling Tools, Personnel Transfer Net/ Basket, Reverse Osmosis Water Maker for Offshore Use, Subsurface Safety Valves and Control Lines along with Accessories, Unit Coolers for Offshore, Ultra Centrifuge with High Speed, Gas Turbines, Leg Braces for Jack-up Rig.
- I. **Oil and Gas Industry Pumps:** Pumps for Offshore 60 Hz, Plunger Lift System, All types of Sub Surface Pumps, Condensate Pump.
- J. **Production Equipment:** API Filtration Loss Apparatus/HPHT Fluid Loss Apparatus, Coil Tubing Down Hole, Equipment & Tools & Redress Kit, ERD& PBR Packers, Flame Arrestor and Burner Assembly, Portable Ignitor Assembly, RHSB Burner Pilot Nozzle, Invalco, Sand Bailer (Turbo Bailer), PCP & its Accessories, Tubing Retrievable Surface Controlled Subsurface Safety Valve, Vertical Tension Anode (VTA) - Impressed Current Cathodic Protection (ICCP) System, Sub Surface Safety Valve & Control Unit along with Accessories, Dual Hydraulic Packer, Coil Tubing Reels, Tubing Handling Tools, Telescopic Joint, Wire Line GLV. Slickline/ Piano Wireline, Procurement of Seal bore Permanent Packers / Cut to release Packer & Bridge Plugs for HPHT wells (450 Deg F & 15000 Psi), Electrical Submersible Pumps, Electrical Submersible Progressive cavity pump, Linear Rod Pump, Linear Electrical Submersible Pump, Hydraulic Workover unit, High pressure well service pumps, Snubbing unit, HI-LO Safety valve, Sucker Rod (downhole) Pump, Downhole Gas Separator, Downhole Anchor Catcher, Matrix Acidization Tool.
- K. **Well Head, X-Mas Tree and BOPs:** High Pressure Well Head And X-Mas Trees, Frac tree, Unitized Well Head, Blow Out Preventer, Choke & Kill manifold and Line, High Pressure Hoses & Rotary Hoses, Choke and Kill hoses, Drilling Hose, Marine Hose, Subsea Hose, IBOPS, FOSV, Upper & Lower Kelly valve/Cock, Kelly All Sizes Subsea Wellhead & X-Mas Tree, Electronic Well Head Manometer Subsea Valves, Wellhead Shutdown Panels Pneumatic Control, Sub-Sea Valve Control Fluid, Hydraulically Operated Gate Valves / HCR Valves, Thermal Well Head, Equipment/items for CSS (cyclic steam stimulation), High Pressure & High Temp wellhead and X-mass tree, High pressure pump for well killing purpose.
- L. **Well Stimulation:** Various types of Well stimulation service (WSS) Unit, Packer Swell, Perforated Liner (5" Slotted), Gravel Pack Screen, 125 Micron Premium Sand Screen, Premium Sand Control Screen, 7" Casing Thermal Gravel Pack Packer and its related accessories, Data Van, Chemical additive system (CAS).
- M. **Logging Equipment:** Bottom Hole Oil and Gas Samplers, Colour Printer for Well Log Data, Control Line and Accessories, Logging Unit & Tools Associated Software and Accessories, Log Data Processing & Interpretation Software, Logging Cables, Logging Mast & Pressure Control Equipment, Perforation Material Inclusive Explosives & Deep Penetration Charge (Perforation, Tubular Cutters, Side Wall Core) & Hardware, Logging Tubing Conveyed Perforation Material, Well Calipers, Wettability Tester / Equipment, Wireline Reels. Radioactive (RA) Source, Electronic and Mechanical spares for Logging Unit and Tools, Deep Penetration Charge (Tubing Puncture, Plug/Packer setting explosives), Positive Displacement Samplers (PDS), PVT Samplers, Field Transfer Bench,

Transportation Sample Cylinder / Bottle, Propellant (Solid) with Hardware, Mechanical Cutter for Casing, Tubing and Drill Pipe.

- N. **Fire Fighting Equipments:** Multilayer complete Fire Proximity Suit meeting EN 1486 or NFPA 1971 standard and marked with CE or UL, Aqueous Film Forming Foam (AFFF) compound - 6% (US Military specifications -24385).
- O. **Patented equipment/item:** Patented equipment/item required for production and drilling enhancement in oil field.
- P. **Items required for crude oil/ gas processing:** ARI Chemicals (ARI-310 C, ARI-350, ARI-400 & ARI-600), Synthetic Lub Oil for Gas Turbines of Siemens Make, Atomic Absorption Spectrophotometer, Shear Mixer Pump, Vapor Pressure Tester, Rotary Evaporator, Paraffin wax content apparatus (Petro test).

Services / Specialized services:

- Q. **Cementing Services:** Cementing Services with additive for Offshore, Expandable Liner Hanger Services for Offshore, External Casing Packer Service for Offshore.
- R. **Drilling Services-specialised:** Casing Drive System & Services, Casing While Drilling Services, Direction Drilling, Services (RSS, MWD, LWD, MPWD, SRDH & GWD), Liner While Drilling Services, Multiple Activation Circulation Bypass Tool & Services, Real Time Data Monitoring & Analytics Services, Turbine with Impregnated Bits & Services, Under Reamer Services, Under-Balanced Drilling Services, Well Coring Services, Whipstock Window Milling Services, Managed Pressurized Drilling Services, Hiring of Well Engineering & Completion Services for Drilling of Exploratory Wells and Completion of Development Wells in Deep Waters, Hiring of HF & CT services for Hydro fracturing HPHT wells, Hiring of Fishbones Services including consumables.
- S. **Logging Services:** Hiring of Services related to Logging While Drilling (LWD), Hiring of Wireline Logging, Perforation, TCP-DST, Compact Logging and well intervention services for Offshore and Onshore.
- T. **Mud Chemical Services:** Specialized Loss Circulation Control Services with Materials, Specialized System LCM Services with Materials, LTSOBM Services along with material for Eastern Offshore, HTHP Testing Fluid Services along with Material (Calcium Bromide + Tri Manganese Tetra Oxide), HTHP Testing Fluid Services along with Material (Potassium Formate +Tri Manganese Tetra Oxide).
- U. **Other Specialised Services:** Specialized consultancy services, Specialized oil field services, Specialized Technical Services and Training Subscriptions, Specialized Software Services and their AMC. Supply and Installation of Mud line Suspension System (MLS). Coil Tubing conveyed down hole tools with redress kits, Hydraulic Workover services in Live wells, Snubbing services, Production Enhancement Contracts, Database Subscriptions, Market Intelligence Tools, Specialized Services related to Upstream Services of E&P including training from foreign firms.
- V. **Specialised Consultancy Services for overseas Assets:** Due Diligence and Evaluation for Overseas Asset Acquisition and/or Divestment (Oil/Gas/LNG/Critical Minerals) for Technical, Legal, Financial (Transactional), Tax and Accounting; Services for Management and Operations of Overseas Assets such as Technical, Legal, Financial, Tax and Accounting, Auditing, etc.
