ऑयल इंडिया
OIL INDIA

Oil India Limited
INDEG Department
Field Head Qtr.
Dist.: Dibrugarh; P.O: Duliajan; Assam: 786602
E-mail: indeg@oilindia.in

EOI Ref. No.: INDEG/OIL/EOI/07/1785/Phase I - XXXI – 2026-27 dated 04.11.2026

"Aatmanirbhar Bharat Abhiyyan (Self-Reliant India)" launched in May 2020 by Prime Minister Narendra Modi, is a national mission designed to make the country economically independent, globally competitive, and resilient against external shocks.

Oil India Limited (OIL) is committed to take forward the vision of "Aatmanirbhar Bharat Abhiyyan" for Import substitution of items required by Oil India Limited (OIL).

Interested companies are requested to send their Expression of Interest with all documentary evidence for the items listed herewith as per format attached to INDEG Department of OIL at Email ID: indeg@oilindia.in.

Development orders will be placed for the items, if found suitable as per OIL's Development order policy as uploaded in our website: www: oil-india.com >>For Vendor.

Vendors may send their Expression of Interest by 28.02.2027.

(Please type on your Letter Head)

Ref. No……. Date:

To
General Manager (INDEG)
INDEG Department
Oil India Limited
Duliajan-786602
Assam
(Email ID: indeg@oilindia.in)

Expression of Interest

Company Details

1	Company Name	
	Whether manufacturer. If not, whether dealer, distributor etc. (Authorization certificate with proper validity from OEM to be enclosed)	
2	Factory Address	
3	Office Address	
4	Contact Person	
5	E-mail ID	
6	Mobile/Cell Phone No	
7	Product/Service Proposed for Development	
8	Quantity Offered for Field Trial (Based on field requirement, actual quantity to be decided)	
9	Delivery Schedule	
10	Estimated Price of the Product / Unit/service	
11	Have you supplied this item to Indian Oil & Gas Companies (names of companies) If yes, documentary evidence for successful execution of order must be submitted	

Details with copies of relevant documents

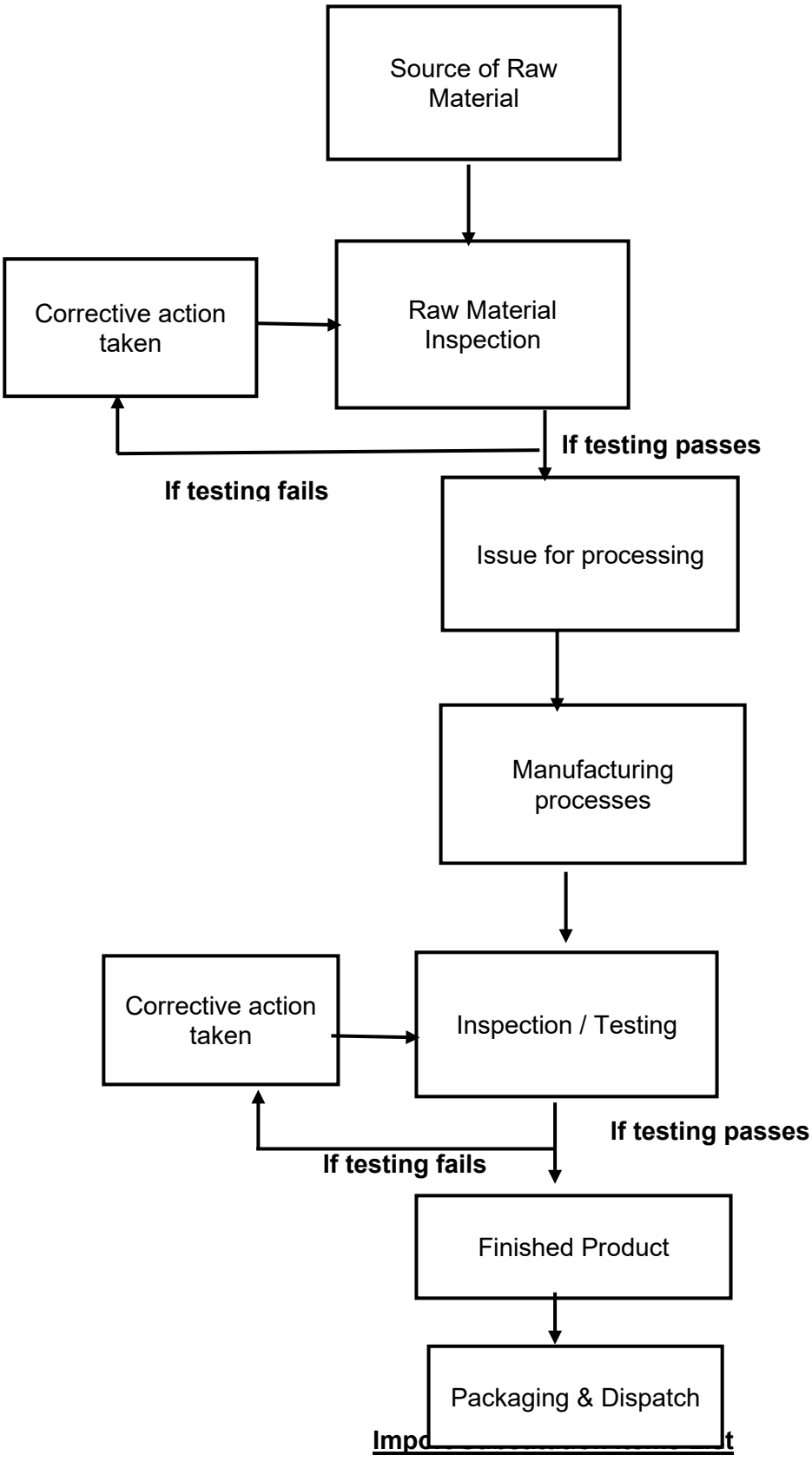
1	Details of infrastructure of office & manufacturing plants.
2	Manpower details with total numbers.
3	Manufacturing process flow chart as per format attached and Declaration of In-House & Outsource (if applicable) manufacturing processes with documentary evidence.
4	Equipment, Machineries owned by you used to manufacture the offered product.
5	Testing details & equipment available with you that are used for quality control of the raw material as well as offered product and declaration of outsourcing if any.
4	Existing product/service details apart from the offered items/services.
5	Declaration of local content of the offered product/service (Declaration must be certified by Statutory Auditor or Cost auditor).
6	Copy of last two years Audited Balance Sheet including Profit and Loss Account of the Company.
7	Copy of company Incorporation Certificate along with Memorandum of Association (MOA) / Articles of Association (AOA) / Limited Liability Partnership Agreement OR Copy of partnership deed in case of partnership company.
8	Copy of GST Registration Certificate.
9	Copy of PAN Card.
10	Copy of MSME Certificate, if any.
11	Copy of NSIC Certificate, if any.
12	Copy of Factory License, if any.

Name: ……..…….. Signature …… Designation……

Generic Manufacturing Process Flow Chart

The flow chart depicted below is generic in nature. Each steps shown here may involve many steps/processes. The applicant must specify whether the steps involved are in-house or outsource (if applicable).

Flow chart must be submitted in your company letter head with authorised person signature with attached seal.



Sl. no.	ITEM DESCRIPTION
1	CROME CASING PIPES
2	CHROME TUBING PIPES
3	DRILL PIPES
4	HEAVY WEIGHT DRILL PIPE
5	DRILL COLLARS AND LIFTING PLUG
6	DRILLING STABILIZERS
7	DRILLING/ WORKOVER HANDLING TOOLS --- ELEVATORS, TONGS, SLIPS etc.
8	POTASSIUM FORMATE
9	SOLID CONTROL EQUIPMENT --- MUD CLEANER/ DEGASSER/ CENTRIFUGE/ LINEAR MOTION SHALE SHAKER
10	SUCKER ROD PUMP (SRP) AND ITS ACCESSORIES: • Tubing Conveyed Sucker Rod downhole Pump • Rod Conveyed Sucker Rod downhole Pump • Downhole Gas Separator • Downhole Anchor Catcher SRP Fishing Tools: • Overshot • Spares for Overshot (grapple, control, guide etc.)
11	SRP INSERT PUMP
12	ETHYL MERCAPTAN
13	EMD CHEMICAL DOSING PUMP, RECIPROCATING PUMP
14	HSP 20/40, ISP 20/40, ISP 30/50 MESH
15	LOGGING CABLES 1) 5/16" OD Monoconductor Logging Cable 2) 7/32" OD Monoconductor Logging Cable
16	TRI CONE ROLLER DRILLING BITS OF VARIOUS SIZES
17	11"OD STANDARD REVERSE CIRCULATING JUNK BASKET & 7.7/8" OD REVERSE CIRCULATING JUNK BASKET
18	PDC DRILL BITS OF VARIOUS SIZES
19	FISHING TOOL; 6.5/8 INCHES OD JUNK SUB FOR OPERATION INSIDE 8.1/2 INCHES HOLE
20	IMPRESSION BLOCK FOR 4.5 INCH OD, 5.0 INCH OD, 9.625 INCH OD & 13.375 INCH OD CASING
21	PNEUMATIC SPINNER
22	5.1/ 2" PREMIUM THREADED CASING (GRADE: N80 & GRADE P110)
23	CASED HOLE LOGGING UNITS WITH TOOLS AND ACCESSORIES ALONG WITH INSTALLATION, COMMISSIONING AND TRAINING
24	WIRELINE MAST UNIT, INCLUDING TRAINING AND INSTALLATION& COMMISSIONING
25	OIL WELL EXPLOSIVES: (I) 2-1/8 INCH TUBING CUTTER ALONG WITH DETONATOR AND HARDWARE ACCESSORIES (II) 1-9/16 INCH TUBING PUNCHER/ CIRCULATION CHARGE & HARDWARE ACCESSORIES
26	OIL WELL EXPLOSIVES: EXPLOSIVES FOR BAKER PRESSURE SETTING TOOLS: POWER CHARGE, PRIMARY IGNITOR & SECONDARY IGNITOR i) High Temp. Power Charge, Size-20, BST ii) Firing Head Ignitor, Size-20, BST iii) Secondary Ingitor, Size-20, BST
27	PROCUREMENT OF OIL WELL EXPLOSIVES USED IN EXPLORATION AND PRODUCTION OF HYDROCARBON (I) DEEP PENETRATION CHARGES

	(II) RESISTORIESS DETONATOR ASSY, (III) DETO CORD 80 HMX NYLON LS 1.4S (IV) 54 MM STRIP CARRIER, 6SPF, 12 FT/3 M LONG (V) DETOCORD /CHARGE CLIPS (VI) TANDEM CONNECTOR ,2.1/8" STRI P CARRIES (VII) SPLICE BOOT FOR LEAD WIRE (VIII) DETONATOR CORD RETAINER (IX) 53.975 MM (2.1/8") OD FIRING HEAD ASSY (X) NUT & BOLT FOR CONNECTING STRIP (XI) NUT & BOLT FOR CONNECT TANDEM(XII) DETO CORD END SEAL (100 NOS./PKT) (XIII) 2.1/8" CHARGE TIGHTENING WRENCH
28	27.1/2" (698.50 MM) ROTARY TABLE
29	7.1/16" X 10 M DOUBLE RAM BOP WITH ACCESSORIES
30	13.5/8" X 10 M SINGLE RAM BOP WITH ACCESSORIES
31	3.1/16" X 10 M FLEXIBLE STEEL HOSES FOR CHOKE MANIFOLD 3.1/8" X 5 M FLEXIBLE STEEL HOSES FOR CHOKE MANIFOLD
32	2.1/16" X 5M - SS FLEXIBLE STEEL HOSE 3.1/16" X 10M - SS FLEXIBLE STEEL HOSE 3.1/8" X 5M FLEXIBLE STEEL HOSES
33	THERMAL WELLHEADS FOR 7" AND 9.5/8" CASING COMPLETION WITH INSTALLATION & COMMISSIONING
34	HOSE VIBRATOR
35	ROTARY HOSE, DRILLING IN ASSORTED LENGTH
36	2.34 MM (0.092") PIANO WIRELINE (WELL MEASURING LINE)
37	350 SHORT TON DRILLING HOOK & ELEVATOR LINKS (250 SHORT TON, 350 SHORT TON AND 500 SHORT TON)
38	DIGITAL ACOUSTIC LIQUID LEVEL MEASURING CUM DYNAMOMETER EQUIPMENT (ECHOMETER)
39	CROSS OVER, PREMIUM BOX X API EUE & PUP-JOINT, 2.7/8", PREMIUM IN ASSORTED LENGTH
40	GEOLOGICAL THIN SECTION PREPARATION UNIT COMPRISING OF CUTTING, VACUUM IMPREGNATION, GRINDING AND POLISHING EQUIPMENT AND CONSUMABLES.
41	POLARISED MICROSCOPE
42	PONY DRILL COLLAR
43	PREMIUM TUBING
44	37.1/2” ROTARY TABLE
45	AIR GAS PERMEAMETER
46	DOUBLE BLOCK AND BLEED ISOLATION PLUG
47	GAS CHROMATOGRAPH
48	LOW TO MODERATE TEMPERATURE CEMENT RETARDER
49	HIGH TEMPERATURE FLUID LOSS CONTROL CEMENT ADDITIVE
50	XCD-POLYMER
51	XC-POLYMER (PREMIUM)
52	POLY ANIONIC CELLULOSE-SUPER LO
53	JUNK SUB 5.1/2 INCH & 7 INCH
54	13.5/8-INCH X 10000 PSI ANNULAR BOP
55	13.5/8-INCH X 10000 PSI Double RAM BOP.
56	CT REELS
57	SUPER FISHING JAR
58	DRILLING JAR

59	OVERSHOTS
60	SLAMMER LOGGING CABLES Cable, slammer, 0.474" OD seven conductor
61	3” LEFT HAND KELLY
62	MULTI ELEMENT ANALYZER
63	HIGH PERFORMANCE EP LUBE
64	SURFACE MEMORY GAUGE
65	ACCESSORIES OF LOGGING CABLE
66	DOWNHOLE PRESSURE TEMPERATURE GAUGE
67	REAL TIME KINEMATIC DIFFERENTIAL GLOBAL POSITIONING SYSTEM
68	FLOW ASSURANCE SOFTWARE
69	SEISMIC SURVEY DESIGNING AND MODELLING SOFTWARE
70	LOW TO MODERATE TEMPERATURE FLUID LOSS CONTROL CEMENT ADDITIVE
71	HIGH TEMPERATURE CEMENT RETARDER
72	CEMENT FRICTION REDUCER
73	FISHING TOOL – 6.75” OD, AXIAL VIBRATIONAL, SHOCK ABSORBING TOOL 8” OD, AXIAL VIBRATIONAL, SHOCK ABSORBING TOOL
74	TUBING STRIPPER
75	NANO-GRAPHENE BASED LUBRICANT
76	TUBING RETRIEVABLE, SURFACE CONTROLLED, SUB-SURFACE SAFETY VALVE (TR-SCSSSV) WITH ACCESSORIES
77	6 1/2" & 6 ¾” FISHING BUMPER SUB
78	CORE DRESSER
79	CORE PLUG DRILLING EQUIPMENT
80	CIRCULATING OVERSHOT (FISHING TOOL)
81	REVERSE CIRCULATING JUNK BASKET - (FISHING TOOL)
82	METAL MUCHER JUNK MILL - (FISHING TOOL)
83	3.1/2 INCH OD DOWN HOLE MUD MOTOR
84	6.1/2 Inches OD JAR INTENSIFIER (FISHING TOOL)
85	3. 3/8 - 3/5” TAG PERFORATION CHARGES AND ACCESSORIES – EXPLOSIVES A) 3. 3/8 - 3/5” TAG perforation charges. B) Deto-Cord, 80 Grain per feet. C) Fluid-Sensitive, Detonator. D) RF-Safe, Detonator. E) 3. 3/8 - 3/5” TAG, Assembly, 1 M. F) 3. 3/8 - 3/5” TAG, Assembly, 2 M. G) 3. 3/8 - 3/5” TAG, Assembly, 3 M. H) 3. 3/8 - 3/5” TAG, Assembly, 5 M etc.
86	2 1/8” UNIPHASE THROUGH TUBING PERFORATION CHARGE AND ACCESSORIES – EXPLOSIVES A) 2 1/8" OD TTP, charge B) Detonator C) Deto-cord D) Perforation Carrier, 3 m E) Charge Clip F) Tandem Connector for Strip G) Splice Boot H) Detonator cord Retainer

	I) Firing Head J) Nut and Bolt for Strip K) Nut and Bolt for Tandem L) Deto Cord End Seal M) 2.1/8" Charge Tightening Wrench
87	2.7/8" MUD MOTOR
88	DOUBLE PLUG CEMENTING HEAD
89	ROTARY TAPER TAP (FISHING TOOL)
90	CEMENTING UNIT
91	HOT TAPPING UNIT
92	DRILLING SIMULATOR
93	WELLHEAD SAMPLING KIT
94	SPEAR (FISHING TOOL)
95	ECHOMETER
96	4" REVERSE CIRCULATING JUNK BASKET- FISHING TOOL
97	2" AND 2 5/8" DRILL COLLAR SEVERING TOOL (DCST) EXPLOSIVES A) 2" OD Dual End Severing Tool Assembly with accessories B) Explosives Pellet for 2 5/8" OD DCST. C) MDF Assembly for 2 5/8" OD DCST. D) Detonator for 2 5/8" OD DCST etc.
98	WELL SERVICING PUMP PACKAGE FOR WORKOVER OPERATION
99	DIE COLLAR - FISHING TOOL
100	PACKER MILLING & RETRIEVABLE TOOL - FISHING TOOL
101	DRILL PIPE SPINNER
102	DRILL COLLAR ELEVATOR
103	TORQUE MASTER
104	**LT-OSD -** specialized multicomponent chemical formulation that is highly crude specific and is to be designed to effectively separate water from the crude oil emulsion when the curing temperature inside the Emulsion Treater (ET) vessels is 45° C and below. LT-OSD is categorized as LT-OSD: Type I and LT - OSD: Type – II depending on their performance on different type of emulsion characteristics in various oilfields of upper Assam. **PHYSICAL PARAMETERS (For LT OSD Type I and LT OSD Type II)** i) **Appearance:** The product should be completely homogeneous, free flowing liquid between temperatures 5 Degree C and 45 Degree C. It should be free of any insoluble matter, and the product should smell typically like a petroleum distillate and should not have any other obnoxious smell. Moreover, the bidder has to use the same solvent which has been used in the approved Advance Sample, for manufacturing the bulk supply. ii) **Solubility:** Should be soluble in dry crude oil, and also in water-in-crude emulsions containing between 5 % to 60% (+/- 2 %) water. iii) **Compatibility:** The product should be non-corrosive; it must have pH between 6 & 8, and must be compatible with all materials of construction, including alloys. iv) **Shelf Life:** 12 months (Minimum) from the date of bid closing (for Advance Sample) / from the date of dispatch (for bulk supplies against any order) v) **Flash Point:** 50 Degree C minimum (PMCC Method).

	Performance (for LT OSD Type I) The product should be able to separate at least 80% water within 30 minutes and 95% water within 60 minutes from Fresh representative crude oil emulsion (untreated with OSD) at 45 °C in a conventional laboratory test, at a dosage normally not exceeding 60 PPM and also not exceeding that of a field proven product (reference sample) giving specified water separation under identical test conditions. The separation should be clear and distinct - without any water or oil droplets remaining in the other phase, or any sludge formation at the interface. The separated water should be clear, and should not contain more than 3000 PPM of oil, as measured spectrophotometrically. Performance (for LT OSD Type II) The product should be able to separate at least 60% water within 30 minutes and 95% water within 90 minutes from Fresh representative crude oil emulsion (untreated with OSD) at 45 Deg C in a conventional laboratory bottle test or 95 % water within 10 minutes at 45 Deg C in centrifuge test at a dosage normally not exceeding 120 PPM and also not exceeding that of a field proven product (reference sample) giving specified water separation under identical test conditions. The separation should be clear and distinct - without any water or oil droplets remaining in the other phase, or any sludge formation at the interface. The separated water should be clear, and should not contain more than 500 PPM of oil, as measured spectrophotmetrically. **Sample Submission** For Quality Assessment test in OIL's laboratory, 1.5 kg (500 gms each in three bottles) of the sample should be submitted in airtight and properly sealed bottles made of either glass or metal for Laboratory evaluation. Samples submitted in plastic bottles would not be accepted. The samples to be submitted by the Vendor to include the following: i. Sample Marking: ii. Name of the sample iii. Quantity iv. Manufacturer / Supplier's Name & Address Sample related documents: i. **Material Safety Data Sheet (MSDS):** The MSDS should have safety, handling, first-aid, storage, disposal, Toxicological and Ecological Information. ii. **Product Data Sheet (PDS):** PDS should include the following information: 1 Brand/Product name 2 Colour 3 Smell 4 Generic Composition (all active components in case of blends) 5 Solvent Used and its boiling point/range 6 Specific Gravity at 25°C 7 Flash Point (PMCC, °C) 8 Melting Point (°C) 9 Congealing Point (°C) 10 Date of Manufacture 11 Shelf Life (Months)
105	**Enzyme** used for wellbore clean up, perforation zone clean up and stuck pipe removal jobs by removing filter cake in water base mud / well completion fluid. **Bio-surfactant** used along with Enzyme for wellbore clean up, perforation zone clean up and stuck pipe removal jobs in water base mud / well completion fluid.
106	Casing Clamp for 5.1/2", 7" & 9.5/8" casings.
107	CMC-Low Viscous Grade (LVG)

108	Pregelatinized Starch (PGS)
109	Magcoasphasol (MGP)
110	2 Inch OD Through Tubing Scallop Hollow Carrier Spiral Perforating Gun System & Accessories (Explosives and Hardware) A) Shaped Charges 2" , Super Deep, HMX. B) 40 grian/ft, Primacord. C) RF-Safe, Detonator. D) Gun Assembly, 6 M. E) Gun Assembly, 3 M. F) High Pressure Firing Head G) Redress Kit H) O-ring for High Pressure Firing Head I) Firing Head Adapter J) Tandem Sub K) Bottom Sub L) RF-Safe Detonator, Firing Panel M) Bi-directional Booster N) Booster-Kit Assembly O) Crimp Sleeve for 40 Grain Grain Deto Cord and Bi-directional Booster etc.
111	13.5/8" x 5000PSI W.P. Double studded Double Pack off Adapter Flange as per API SPEC 6A
112	11" x 10000 PSI W.P. Double studded Double Pack off Adapter Flange as per API SPEC 6A
113	POTASSIUM SULPHATE
114	POLYAMINE
115	SODIUM FORMATE
116	LEFT HAND DRILL PIPE
117	BLADED JUNK MILL
118	ROTARY WASH OVER SHOE, WASH OVER PIPES AND DRIVE SUB
119	FLAT BOTTOM MILL
120	TAPER MILL
121	7.1/16" X 10 M ANNULAR BOP
122	7.1/16" X 5 M ANNULAR BOP
123	SHORT PIN TAPES (LEFT HAND):
124	90 T TUBING SWIVEL
125	7.1/16" X 5 M DOUBLE RAM BOP WITH ACCESSORIES
126	7.1/16" X 5 M SINGLE RAM BOP WITH ACCESSORIES
127	FULL OPENING SAFETY VALVE (FOSV)
128	CUP TYPE TESTER
129	JAR TESTER
130	SHOCK SUBS
131	TONG LINE PULL AND LOAD CELL ASSEMBLY

132	INTERNAL CASING CUTTER
133	BATTERY OPERATED DIGITAL PUMP STROKE COUNTER SYSTEM
134	0.108" & 0.125″ SLICKLINE
135	PREMIUM CONNECTION VACUUM INSULATED TUBING & CROSSOVER (VIT)
136	**OSD Type-I:** General Description of the item: Oil Soluble Demulsifier (OSD: Type - I) is a crude specific formulation which is used for breaking water- in- crude oil emulsion. **PHYSICAL PARAMETERS** i. **Appearance:** The product should be completely homogeneous, free flowing liquid between temperatures 5 Degree C and 45 Degree C. It should be free of any insoluble matter, and the product should smell typically like a petroleum distillate and should not have any other obnoxious smell. Moreover, the bidder has to use the same solvent which has been used in the approved Advance Sample, for manufacturing the bulk supply. ii. **Solubility:** Should be soluble in dry crude oil, and in water-in-crude emulsions containing between 5 % to 60 % (+/- 2 %) water. iii. **Compatibility:** The product should be non-corrosive; it must have pH between 6 & 8, and must be compatible with all materials of construction, including alloys. iv. **Thermal Stability:** The product should be stable and effective even if the fluid treated with this product is exposed to a temperature of 70°C for up to 3 hours. v. **Shelf Life:** 12 months (Minimum) from the date of bid closing (for Advance Sample) / from the date of dispatch (for bulk supplies against any order) vi. **Flash Point:** 50 Degree C minimum (PMCC Method). Performance (for OSD Type I) The product should be able to separate at least 80% water within 30 minutes and 95% water within 60 minutes from Fresh representative crude oil emulsion (untreated with OSD) at 60 °C in a conventional laboratory test, at a dosage normally not exceeding 60 PPM and also not exceeding that of a field proven product (reference sample) giving specified water separation under identical test conditions. The separation should be clear and distinct - without any water or oil droplets remaining in the other phase, or any sludge formation at the interface. The separated water should be clear, and should not contain more than 3000 PPM of oil, as measured spectrophotometrically. Sample Submission For Quality Assessment test in OIL's laboratory, 1.5 kg (500 gms each in three bottles) of the sample should be submitted in airtight and properly sealed bottles made of either glass or metal for Laboratory evaluation. Samples submitted in plastic bottles would not be accepted. The samples to be submitted by the Vendor to include the following: i. Sample Marking: ii. Name of the sample iii. Quantity iv. Manufacturer / Supplier's Name & Address Sample related documents: i. Material Safety Data Sheet (MSDS): The MSDS should have safety, handling, first-aid, storage, disposal, Toxicological and Ecological Information. ii. Product Data Seet (PDS): PDS should include the following information:

	1 Brand/Product name 2 Colour 3 Smell 4 Generic Composition (all active components in case of blends) 5 Solvent Used and its boiling point/range 6 Specific Gravity at 25°C 7 Flash Point (PMCC, °C) 8 Melting Point (°C) 9 Congealing Point (°C) 10 Date of Manufacture 11 Shelf Life (Months)
137	CONTINUOUS CONTROL LINE ALONG WITH ACCESSORIES FOR DOWNHOLE CHEMICAL INJECTION SYSTEM
138	**Oil Evacuation & Filling Station** The Oil Evacuation & Filling Station is a system comprising of a vacuum pump, circulation pump, a reservoir for oil, and interconnected hoses and valves to control the flow mounted on a portable cart designed to evacuate air out of, and fill oil into a logging tool under vacuum. The Oil Evacuation & Filling Station is a system designed to evacuate air out of, and fill oil into a logging tool under vacuum. It is used so that the logging tool is completely free from air, moisture, impurities when oil is filled into it. The system consists of the following main components: 1. An oil reservoir/tank approx. 20 litres. 2. 0.33 HP Vacuum pump running on 220Vac, 50Hz Supply 3. 0.5 HP Variable speed DC circulation pump controlled by a Motor Controller running on 220Vac, 50Hz Supply 4. A portable cart on which the system is mounted. 5. Transparent Hoses, unions, and valves to control flow as per usage rated for working pressure of 400 PSI or higher. 6. Power supply etc. 7. Inline filters to filter out any impurities in the oil. The system has a fill line connected to the pump, which takes suction from the oil reservoir and fills up the tool through one port, and a return line which flows the oil out of the second port of the tool and into the reservoir. Both lines have inline filters so that the oil entering the tool and the reservoir are free from impurities. The system is designed such that the vacuum is created in the tool before and during the filling so that the oil in the tool is devoid of any air. The system is also able to intake oil into the reservoir for refilling from one of its lines. Another feature of the system is to be able to clean and de-gas the oil present in the reservoir by circulating it in a closed loop through the filters in a vacuum state without the tool being connected to the system. A combination of hoses, unions, tees, tubes, valves, and quick connects in the system controls the flow of oil depending on whether only vacuum, only circulation, a combination of both, or oil cleaning is required.
139	CHEMICAL NAME: **Liquid Flow Improver – Type II (LFI –Type II)** UNIT OF MEASUREMENT: kg (kilogram) **Chemical used for reduction of viscosity and Pour Point of crude oil.** **PHYSICAL PARAMETERS** I. **State:** Homogeneous, clear and free-flowing liquid at a temperature of 22°C and above, free from insoluble (liquid or solid) matter II. **Smell:** The product should smell typically like a petroleum distillate, and should not

have any other obnoxious smell

III. **Solvent:** Use of only the following solvents is permissible for manufacturing the Advance Sample and the bulk supply: Toluene / Xylene or mixed Xylene / Ethyl Benzene or combination thereof. The solvent should not contain organic compounds like 2-Pinene, 3Carene, D-Limonene or Terpenolene even in trace amount. Moreover, the bidder has to use the same solvent which has been used in the approved Advance Sample, for manufacturing the bulk supply.

IV. **Congealing Point: 10°C** (or lower)

V. **Melting Point: 20°C** (or lower)

VI. **Viscosity** of the product at 20°C when measured at 25 inverse seconds shear rate with Brookfield DV-III cone & plate Rheometer (with CPE-41 cone): **80 cP** (or lower)

VII. **Solubility:** Soluble in Toluene and HSD in all proportions at 22**°**C and above

VIII. **Shelf life:** 18 months (minimum) from the date of dispatch of the Advance Sample / consignments

Test procedure for measuring Congealing & Melting Points

For determination of Congealing and Melting Points of a "LFI – Type II" product, 5 gm sample of that product would be taken in a 10 mL graduated and stoppered borosilicate glass test tube. That tube would be immersed up to 10 mL mark in a refrigerated water bath maintained at 16°C. After 10 minutes, the temperature of the water bath would be set to the next lower even number (i.e. 14°C), and thereafter would be set to decrease in steps of 2°C. There would be a gap of 10 minutes between two successive steps. The physical state (liquid / gel) of the sample would be checked after 10 minutes from the time the water bath is set at that temperature, before reducing the bath temperature further by 2°C. The temperature at which the sample gels completely, would be noted as Congealing Point of that "LFI – Type II" product.

After the Congealing Point of the sample is reached, the temperature of the water bath would be set to increase by 2°C in successive steps at 10-minute intervals, and the physical state of the sample is checked before every stepping-up of temperature. The temperature at which the sample is found to have completely melted, would be noted as Melting Point of that "LFI – Type II" product.

Congealing and Melting Point temperatures would be recorded and reported in even numbers, because of the temperature ramping protocol described above.

PRODUCT PERFORMANCE TEST IN THE LABORATORY

2.a. Test Procedure

2.a.1. Test on crude oil treated at 50°C.

The typical test crude oil will have water content up to one percent and Pour Point normally in the range of 27°C to 36°C. 500 mL of the test crude oil would be heated at 50°C in a water bath for 30 minutes, and then treated with the "LFI – Type II" sample at a dosage not exceeding 1000 ppm (weight / volume). The treated crude oil would again be heated at 50°C for 30 minutes, to complete the crude oil treatment process.

The following two parameters of the treated crude oil shall be evaluated within 48 hours:

i. **Viscosity:** Apparent viscosity (cP) would be measured at a shear rate of 25 inverse seconds by Brookfield DV-III cone & plate Rheometer (with CPE-41 cone) through a pre-defined software programme at temperatures starting from 30°C down to 15°C (or limited by the viscosity measurement range of the instrument) at 3-degree intervals.

ii. **Pour Point:** Pour Point (°C) would be measured as per ASTM D-5853.

2.a.2. Test on crude oil treated at its Pour Point temperature.

500 mL of the untreated (raw) test crude oil would be heated up to 50°C in a water bath, then

	cooled down to its Pour Point temperature (which would normally be in 27°C to 36°C range) with constant stirring with a mechanical stirrer**.** 1000 ppm (weight / volume) of the "LFI – Type II" sample (Advance Sample / consignment sample) would be added to the crude oil at that temperature while stirring the crude oil constantly, and the stirring would continue for another 5 minutes. The Pour Point of that treated crude oil would be measured (without any pre-heating) immediately thereafter. **2.b. Performance Requirement** **2.b.1. Crude oil treated at 50°C.** **i. Viscosity:** Apparent Viscosity (AV) of the test crude oil treated [as per para 2.a.1 above] with any "LFI – Type II" sample (**Advance Sample** / consignment sample) not exceeding 1000 ppm should compare positively (under identical test conditions) with AV of the same test crude oil treated at identical dosage with a **reference sample**. However, even if the test crude oil treated with any "LFI – Type II" sample (Advance Sample / consignment sample) shows a deviation (higher value) up to ten percent in AV compared to the AV of the crude oil treated with the reference sample, that "LFI – Type II" sample (Advance Sample / consignment sample) would be considered to have passed this performance evaluation criterion. The comparison of AV would be done at the viscosity measuring temperature of 15°C. However, in case AV measurement of the crude oil sample treated with reference "LFI – Type II" sample at 15°C is not possible because the AV increases beyond the viscosity measurement range of the Rheometer at 15°C and 25 inverse seconds shear rate, then the comparison would be done at the lowest temperature (18°C or above at 3°C intervals) at which AV of the crude oil sample treated with the reference "LFI – Type II" sample could be measured. **ii. Pour Point:** The Pour Point of the test crude oil treated with any "LFI – Type II" sample (Advance Sample / consignment sample) at a dosage not exceeding 1000 ppm should be equal to or less than the Pour Point of the same test crude oil treated with the reference sample at identical dosage. **2.b.2. Crude oil treated at its Pour Point temperature.** The Pour Point of the test crude oil treated at its Pour Point temperature [following the procedure as described in Point No. 2.a.2 above] with 1000 ppm of a "LFI – Type II" sample (Advance Sample / consignment sample) should be equal to or less than the Pour Point of the same test crude oil treated with the reference sample at 1000 ppm**,** under identical test conditions.
140	**<u>ELEVATORS</u>:** **a. 5.½ Inches Casing Single Joint Elevator.** a.a Description: Single joint collar type elevator for handling 5.½ inches (139.70 mm) od casing, 5 short ton capacity as per the following minimum specifications for each item. a.b The item must be complete with swivel suspension assembly of 5 short ton capacity. a.c Elevator should be made from high quality alloy steel, fully heat treated, equipped with latch and safety lock combination. The item should be manufactured, tested, and monogrammed strictly as per API 8C (latest edition) PSL-2. **b. 7 Inches Casing Single Joint Elevator.** b.a Description: Single joint collar type elevator for handling 7 inches (177.80 mm) od casing, 5 short ton capacity as per the following minimum specifications for each item. b.b The item must be complete with swivel suspension assembly of 5 short ton capacity. b.c Elevator should be made from high quality alloy steel, fully heat treated, equipped with latch and safety lock combination. The item should be manufactured, tested,

	and monogrammed strictly as per API 8C (latest edition) PSL-2. **c. Side Door Elevator for Handling 4.1/2" OD Casing/Liner, 250 Ton (Short) Capacity.** c.a Description: Collar Type Side Door Elevator as per API 8C, PSL-2, 250 Ton rated Capacity, for handling 4.1/2" OD Casing. c.b PSL-2 components shall be fabricated from materials meeting the applicable requirements for ductility specified in API Specification 8C - 6.3.7 (Table - 2). c.c SR-1 Proof Load Test: The items (7 INCHES OD CASING SIDE DOOR ELEVATORS) shall be given a proof load test and subsequently examined in accordance with 8.6.2 and will be marked "SR-1" accordingly near the load rating identification (API Specification 8C-Annex A.2). Test reports, verified by any one of the OIL's approved third-party inspection agencies. c.d SR-3 Data Book: The Manufacturer's Data Book as per API Specification 8C - Annex A.4 for all the items will be submitted along with the supply. **d. Side Door Elevator for Handling 7" OD Casing/Liner, 250 Short Ton Capacity.** d.a Description: Collar Type Side Door Elevator as per API 8C, PSL-2, 250 Ton rated Capacity, for handling 177.80 mm (7") OD Casing. d.b PSL-2 components shall be fabricated from materials meeting the applicable requirements for ductility specified in API Specification 8C - 6.3.7 (Table - 2). d.c SR-1 Proof Load Test: The items (7 INCHES OD CASING SIDE DOOR ELEVATORS) shall be given a proof load test and subsequently examined in accordance with 8.6.2 and will be marked "SR-1" accordingly near the load rating identification (API Specification 8C-Annex A.2). Test reports, verified by any one of the OIL's approved third-party inspection agencies. d.d SR-3 Data Book: The Manufacturer's Data Book as per API Specification 8C - Annex A.4 for all the items will be submitted along with the supply. **e. Collar Type Centre Latch Elevator for 4.3/4" OD Drill Collars, 150 Short Ton Capacity.** e.a Description: Collar Type Centre Latch Elevator, 90-degree square shoulder for handling 120.65 mm (4.3/4") OD Drill Collar with lift plugs (i.e. without ziplift recess). e.b Safety Latch Lock, Latch & Extra handle at the rear of the elevator. e.c The elevators shall be manufactured, load tested & certified as per API Spec. 8C (PSL-2). e.d Marking (including API Monogram) shall be done as per API 8C Specification. e.e The maximum weight of the elevator should not be more than 168 Kgs (370 lbs). e.f PSL-2 components shall be fabricated from materials meeting the applicable requirements for ductility specified in API Specification 8C - 6.3.7 (Table - 2). e.g SR-1 Proof Load Test: The items (4.3/4 INCHES OD DRILL COLLAR ELEVATORS) shall be given a proof load test and subsequently examined in accordance with 8.6.2 and should be marked "SR 1" accordingly near the load rating identification (API Specification 8C - Annex A.2). Test reports, verified by any one of the OIL's approved third-party inspection agencies. e.h SR-3 Data Book: The Manufacturer's Data Book as per API Specification 8C - Annex A.4 for all the items should be submitted along with the supply.
141	**CHART RECORDER WITH PRESSURE GAUGE:** **a. Hydraulic Pressure Recorder: (10000 PSI)** a.a High Pressure Portable Hydraulic Pressure Recorder system for working with 04 (Four) hours clock (Manual clock system). a.b Capacity of the recorder system: 10000 psi (420 kg /sq.cm). a.c The system should be of NOV-MD TOTCO pressure recorder, Model M366 or equivalent. a.d Single pen recorder with one pressure input (0-10000 psi). a.e The item should be complete with following accessories: i. 15 feet (4590 mm) long x 0.25-inch (6.37 mm) H.P. hose assembly.

	ii. High pressure recorder with 5-inch pressure indicator. iii. Diaphragm protector. iv. Check Valve. v. Coupling, half disc female and half disc male. vi. Glass Cover. vii. Glass Gasket. viii. Fluid Injector instrument. ix. Chart (Standard 12-inch circular chart paper). x. Calibration kit. **b. Hydraulic Pressure Recorder: (6000 PSI)** b.a High Pressure Portable Hydraulic Pressure Recorder system for working with 04 (Four) hours clock (Manual clock system). b.b Capacity of the recorder system: 6000 psi (420 kg /sq.cm). b.c The system should be of NOV-MD TOTCO pressure recorder, Model M365-415 or equivalent. b.d Single pen recorder with one pressure input (0-6000 psi). b.e The item should be complete with following accessories: i 15 feet (4590 mm) long x 0.25-inch (6.37 mm) H.P. hose assembly. ii High pressure recorder with 5-inch pressure indicator. iii Diaphragm protector. iv Check Valve. v Coupling, half disc female and half disc male. vi Glass Cover. vii Glass Gasket. viii Fluid Injector instrument. ix Chart (Standard 12-inch circular chart paper). x Calibration kit.
142	CHEMICAL NAME: **Liquid Flow Improver – Type I (LFI –Type I)** UNIT OF MEASUREMENT: kg (kilogram) **Chemical used for reduction of viscosity and Pour Point of crude oil.** **PHYSICAL PARAMETERS** i. **State:** Homogeneous, clear and free-flowing liquid at a temperature of 24°C and above, free from insoluble (liquid or solid) matter ii. **Smell:** The product should smell typically like a petroleum distillate, and should not have any other obnoxious smell iii. **Solvent:** Use of only Toluene and Xylene solvent (Ortho, Meta, Para and Ethylbenzene isomer) is permissible for manufacturing the Advance Sample and the subsequent bulk supply. The solvent should not contain organic compounds like 2-Pinene, 3-Carene, D- Limonene, Terpenolene, Indane, Styrene, Naphthalene and bicyclic compounds even in trace amount. OIL has the authority to verify the components through necessary experimentations. In case the deviation in solvent components is observed between advance and bulk supply, OIL has the right to reject the consignment. iv. **Congealing Point:** 14°C (or lower) v. **Melting Point:** 22°C (or lower) vi. **Viscosity** of the product at 20°C when measured at 25 inverse seconds shear rate with Brookfield cone & plate Rheometer (with CPE-41 cone): 80 cP (or lower) vii. **Solubility:** Soluble in Toluene and HSD in all proportions at 24°C and above viii. **Shelf life:** 18 months (minimum) from the date of dispatch of the Advance Sample / consignments **Test procedure for measuring Congealing & Melting Points** For determination of Congealing and Melting Points of a “LFI – Type I” product, 5 gm sample of that product would be taken in a 10 mL graduated and stoppered borosilicate glass test tube. That tube would be immersed up to 10 mL mark in a refrigerated water bath maintained at 18°C. After 10 minutes, the temperature of the water bath would be set to the next lower

even number (i.e. 16°C), and thereafter would be set to decrease in steps of 2°C. There would be a gap of 10 minutes between two successive steps. The physical state (liquid / gel) of the sample would be checked after 10 minutes from the time the water bath is set at that temperature, before reducing the bath temperature further by 2°C. The temperature at which the sample gels completely, would be noted as Congealing Point of that "LFI – Type I" product.

After the Congealing Point of the sample is reached, the temperature of the water bath would be set to increase by 2°C in successive steps at 10-minute intervals, and the physical state of the sample is checked before every stepping-up of temperature. The temperature at which the sample is found to have completely melted, would be noted as Melting Point of that "LFI – Type I" product.

Congealing and Melting Point temperatures would be recorded and reported in even numbers, because of the temperature ramping protocol described above.

2. PRODUCT PERFORMANCE TEST IN THE LABORATORY

2.a. Test Procedure

2.a.1. Test on crude oil treated at 50°C

The typical test crude oil will have water content up to one percent and Pour Point normally in the range of 27°C to 36°C. 500 mL of the test crude oil would be heated at 50°C in a water bath for 30 minutes, and then treated with the "LFI – Type I" sample at a dosage of 400 ppm (weight / volume). The treated crude oil would again be heated at 50°C for 30 minutes, to complete the crude oil treatment process.

The following two parameters of the treated crude oil shall be evaluated within 48 hours:

i. **Viscosity:** Apparent viscosity (cP) would be measured at a shear rate of 25 inverse seconds by Brookfield cone & plate Rheometer (with CPE-41 cone) through a pre-defined software programme at temperatures starting from 30°C down to 15°C (or limited by the viscosity measurement range of the instrument) at 3-degree intervals.

ii. **Pour Point:** Pour Point (°C) would be measured as per ASTM D-5853.

2.a.2. Test on crude oil treated at its Pour Point temperature

500 mL of the untreated (raw) test crude oil would be heated up to 50°C in a water bath, then cooled down to its Pour Point temperature (which would normally be in 27°C to 36°C range) with constant stirring with a mechanical stirrer. 400 ppm (weight / volume) of the "LFI – Type I" sample (Advance Sample / consignment sample) would be added to the crude oil at that temperature while stirring the crude oil constantly, and the stirring would continue for another 5 minutes. The Pour Point of that treated crude oil would be measured (without any pre-heating) immediately thereafter.

2.b. Performance Requirement

2.b.1. Crude oil treated at 50°C

i. **Viscosity:** Apparent Viscosity (AV) of the test crude oil treated [as per para 2.a.1 above] with any "LFI – Type I" sample (Advance Sample / consignment sample) at 400 ppm should compare positively (under identical test conditions) with AV of the same test crude oil treated at 400 ppm with a reference sample. However, even if the test crude oil treated with any "LFI – Type I" sample (Advance Sample / consignment sample) shows a deviation (higher value) up to ten percent in AV compared to the AV of the crude oil treated with the reference sample, that "LFI – Type I" sample (Advance Sample / consignment sample) would be considered to have passed this performance evaluation criterion. The comparison of AV would be done at the viscosity measuring temperature of 15°C. However, in case AV measurement of the crude oil sample treated with reference "LFI – Type I" sample at 15°C is not possible because the AV increases beyond the viscosity

	measurement range of the Rheometer at 15°C and 25 inverse seconds shear rate, then the comparison would be done at the lowest temperature (18°C or above at 3°C intervals) at which AV of the crude oil sample treated with the reference "LFI – Type I" sample could be measured. ii. **Pour Point:** The Pour Point of the test crude oil treated with any "LFI – Type I" sample (Advance Sample / consignment sample) at 400 ppm should be equal to or less than the Pour Point of the same test crude oil treated with the reference sample at 400 ppm. **2.b.2. Crude oil treated at its Pour Point temperature** The Pour Point of the test crude oil treated at its Pour Point temperature [following the procedure as described in Point No. 2.a.2 above] with 400 ppm of a "LFI – Type I" sample (Advance Sample / consignment sample) should be equal to or less than the Pour Point of the same test crude oil treated with the reference sample at 400 ppm, under identical test conditions.
143	**Bactericide - Type-I** (FOR CONTROL OF SULPHATE REDUCING BACTERIA IN FRESH WATER AND FORMATION WATER SYSTEMS IN OILFIELD OPERATION) **1. GENERIC COMPOSITION (Chemical type):** Ammonium or Phosphonium (including THPS) based compounds, or their blend with other chemistries. Presence of free formaldehyde above 0.5% in the finished product is not acceptable. **2. PHYSICAL CHARACTERISTICS:** **(a) Appearance:** Should be a clear, free-flowing homogeneous liquid under ambient temperatures (8°C - 40°C) and should be free of any insoluble matter. **(b) Solubility:** Should be soluble in fresh water and saline (3000-5000 ppm) produced Formation water in all proportions. **(c)Compatibility:** The product should be compatible with produced formation water, and various proprietary oil-field chemicals like Oil Soluble Demulsifiers (OSD), Deoilers (cationic polyelectrolytes), corrosion inhibitors, oxygen scavengers etc that could be in use at different stages (injection points) for treatment of the same fluid. **(d) Thermal Stability:** The product should be stable and effective even if the fluid treated with this product is exposed to a temperature of 70°C for upto 3 hours. **(e) Shelf Life:** The product should be stable and should not lose its potency for one year (minimum) from the date of manufacture, if kept under normal ambient storage conditions. **3. PERFORMANCE** **a) Laboratory:** The product will be tested in the laboratory as per API RP 38 procedure. The product under evaluation should be able to inhibit growth of SRB for 28 days at a dosage normally not exceeding 50 PPM, and not exceeding the minimum effective dosage of a field proven Bactericide product (of the same category) when tested under identical test conditions. **b) Field:** In the fields, the product should be able to inhibit the growth of SRB at a dosage and application regime which has earlier been optimized with a field-approved product. **4. ACCEPTANCE CRITERIA** **a) Tender Sample:** A tender sample has to be submitted in the quantity as specified under the Point (5) below; and it has to meet the Generic Composition [1], Physical Characteristics [2] and Laboratory Performance criteria [3.a] as specified above. In addition, the offer should be accompanied by all relevant information and the self-certification as sought under Point [7] below, for it to be technically acceptable. **b) Bulk Supply:** Every batch of material supplied against any Developmental / Bulk order has to meet the laboratory performance specification [3.a] in the quality assessment test to be carried out in OIL after arrival of the consignments in Duliajan. The supplied material is also required to match the physical characteristics and the laboratory performance of its tender sample (the sample against the performance of which the order would be placed, and which would be kept as a reference sample in the laboratory) when tested under identical test conditions. The supplied material will be deemed acceptable after passing this laboratory evaluation.

	5. SUBMISSION OF TENDER SAMPLE: Suppliers / manufacturers have to submit 1500 gm or 1500 ml sample of the product they are offering, in three (500 gm x 3 or 500 ml x3) sealed and air-tight bottles free of cost for laboratory evaluation. They are also required to upload (in case of e-tender) or submit all relevant product information detailed under point [7] below, along with their tender documents. **6. PACKING OF BULK SUPPLY:** 200 Kg nett in new HDPE drums. Name of the product, batch number, date of manufacture, manufacturer's name and address, OIL's order number and material code (875055619) should be stencilled with indelible paint in bold letters in a contrast color both at the top and on the side of every drum. **7. PRODUCT INFORMATION TO BE PROVIDED BY THE SUPPLIER:** **a) PRODUCT DATA SHEET (PDS)**, which should include the following information: Brand name of the product Generic Composition (all active components in case of blends) Solubility in water Specific Gravity at 25°C Flash Point (PMCC, °C) Date of Manufacture Shelf Life (Months) **b) SELF - CERTIFICATION:** The supplier must submit a certificate mentioning either absence or presence of free Formaldehyde in the offered formulation. In case free Formaldehyde is present in the formulation, its quantity (in percentage) must be mentioned in the certificate. OIL reserves the right to check the free Formaldehyde content in the tender sample and the bulk supplies and reject the sample or the supply if the free Formaldehyde content is found to be higher than the specified upper limit. **c) SAFETY, HANDLING, FIRST-AID, STORAGE & DISPOSALINSTRUCTIONS (MSDS)** **d) TOXICOLOGICAL AND ECOLOGICAL INFORMATION**
144	**Bactericide - Type-II** (FOR CONTROL OF SULPHATE REDUCING BACTERIA IN FRESH WATER AND FORMATION WATER SYSTEMS IN OILFIELD OPERATION) **1. GENERIC COMPOSITION (Chemical type):** Gluteraldehyde or its blend with other chemistries. Presence of free formaldehyde above 0.05% in the finished product is not acceptable. **2. PHYSICAL CHARACTERISTICS:** **(a) Appearance:** Should be a clear, free-flowing homogeneous liquid under ambient temperatures (8°C - 40°C) and should be free of any insoluble matter. **(b) Solubility:** Should be soluble in fresh water and saline (3000-5000 ppm) produced Formation water in all proportions. **(c)Compatibility:** The product should be compatible with produced formation water, and various proprietary oil-field chemicals like Oil Soluble Demulsifiers (OSD), Deoilers (cationic polyelectrolytes), corrosion inhibitors, oxygen scavengers etc that could be in use at different stages (injection points) for treatment of the same fluid. **(d) Thermal Stability:** The product should be stable and effective even if the fluid treated with this product is exposed to a temperature of 70°C for upto 3 hours. **(e) Shelf Life:** The product should be stable and should not lose its potency for one year (minimum) from the date of manufacture, if kept under normal ambient storage conditions. **3. PERFORMANCE** **a) Laboratory:** The product will be tested in the laboratory as per API RP 38 procedure. The product under evaluation should be able to inhibit growth of SRB for 28 days at a dosage normally not exceeding 50 PPM, and not exceeding the minimum effective dosage of a field proven Bactericide product (of the same category) when tested under identical test conditions. **b) Field:** In the fields, the product should be able to inhibit the growth of SRB at a dosage and application regime which has earlier been optimized with a field-approved product.

	4. ACCEPTANCE CRITERIA **a) Tender Sample:** A tender sample has to be submitted in the quantity as specified under the Point (5) below; and it has to meet the Generic Composition [1], Physical Characteristics [2] and Laboratory Performance criteria [3.a] as specified above. In addition, the offer should be accompanied by all relevant information and the self-certification as sought under Point [7] below, for it to be technically acceptable. **b) Bulk Supply:** Every batch of material supplied against any Developmental / Bulk order has to meet the laboratory performance specification [3.a] in the quality assessment test to be carried out in OIL after arrival of the consignments in Duliajan. The supplied material is also required to match the physical characteristics and the laboratory performance of its tender sample (the sample against the performance of which the order would be placed, and which would be kept as a reference sample in the laboratory) when tested under identical test conditions. The supplied material will be deemed acceptable after passing this laboratory evaluation. **5. SUBMISSION OF TENDER SAMPLE:** Suppliers / manufacturers have to submit 1500 gm or 1500 ml sample of the product they are offering, in three (500 gm x 3 or 500 ml x3) sealed and air-tight bottles free of cost for laboratory evaluation. They are also required to upload (in case of e-tender) or submit all relevant product information detailed under point [7] below, along with their tender documents. **6. PACKING OF BULK SUPPLY:** 200 Kg nett in new HDPE drums. Name of the product, batch number, date of manufacture, manufacturer's name and address, OIL's order number and material code (85055621) should be stencilled with indelible paint in bold letters in a contrast color both at the top and on the side of every drum. **7. PRODUCT INFORMATION TO BE PROVIDED BY THE SUPPLIER:** **a) PRODUCT DATA SHEET (PDS)**, which should include the following information: Brand name of the product Generic Composition (all active components in case of blends) Solubility in water Specific Gravity at 25°C Flash Point (PMCC, °C) Date of Manufacture Shelf Life (Months) **b) SELF - CERTIFICATION:** The supplier must submit a certificate mentioning either absence or presence of free Formaldehyde in the offered formulation. In case free Formaldehyde is present in the formulation, its quantity (in percentage) must be mentioned in the certificate. OIL reserves the right to check the free Formaldehyde content in the tender sample and the bulk supplies and reject the sample or the supply if the free Formaldehyde content is found to be higher than the specified upper limit. **c) SAFETY, HANDLING, FIRST-AID, STORAGE & DISPOSALINSTRUCTIONS (MSDS)** **d) TOXICOLOGICAL AND ECOLOGICAL INFORMATION**
145	CHEMICAL NAME: **Scale Inhibitor** UNIT OF MEASUREMENT: kg (kilogram) **Chemical used for control of Calcium Carbonate scale in Formation water systems in oilfield operations** **PHYSICAL PARAMETERS** **a) State:** The product should be a clear, free-flowing homogeneous liquid under ambient temperatures (8°C - 40°C) and should be free of any insoluble matter. **b) Solubility:** The product should be soluble in fresh water and saline (3000-5000 ppm) produced Formation water in all proportions. **c) Compatibility:** The product should have pH between 6.0 & 8.0, and it should be compatible with produced formation water.

	d) Thermal Stability: The product should be stable and effective even if the fluid treated with this product is exposed to a temperature of 70°C for up to 3 hours. **e) Shelf Life:** 18 months (Minimum) from the date of bid closing (for tender samples) / from the date of dispatch (for bulk supplies against any order) PERFORMANCE: Laboratory Test Method **i) Scaling medium** Calcium Chloride Solution: 1.1025 gm of Calcium Chloride (CaCl2.2H2O) and 4 gm of Sodium Chloride (NaCl) are dissolved in distilled water (whose pH is adjusted to 8.0 prior to addition of these chemicals) and volume made up to 1 litre to give a 300 ppm Calcium solution in saline (4000 ppm) medium. Sodium Carbonate Solution: 1.0620 gm of Sodium Carbonate (Na2CO3) and 4 gm of Sodium Chloride (NaCl) are dissolved in distilled water (whose pH is adjusted to 8.0 prior to addition of these chemicals) and volume made up to 1 litre to give 600 ppm Carbonate solution in saline (4000 ppm) medium. Scale Inhibitor (SI) stock Solution: 1000 ppm of SI stock solution is prepared by adding 100 micro-litre of SI sample in 100 mL of distilled water (whose pH is adjusted to 8.0 prior to SI addition). **ii) Scale Inhibitor dosage:** 5 (five) ppm **iii) Temperature:** 60 °C **iv) Exposure period: 18** hours **v) Performance evaluation:** 50 mL each of warm (by keeping the solutions at 60 °C for 2 hours) Calcium Chloride solution and Sodium Carbonate solution are mixed by shaking in presence of 5 ppm of Scale Inhibitor, and kept in an incubator at 60 °C for 18 hours under static condition. The efficiency of the Scale Inhibitor is calculated by comparing the concentration of the Calcium ion (by EDTA titration) in the SI-doped solution with that in a Blank Test conducted without the addition of the Scale Inhibitor. vi) Inhibitor efficiency required: 45% minimum. Percent inhibition values may be calculated as follows: $\% \text{ Inhibition} = (Ca - Cb)/(Cc - Cb) \times 100$ Where: Ca = Ca2+ concentration in the treated sample after precipitation Cb = Ca2+ concentration in the blank after precipitation Cc= Ca2+ concentration in the blank before precipitation
146	CHEMICAL NAME: **DEOILER** UNIT OF MEASUREMENT: kg (kilogram) Chemical used for reducing the oil content in produced formation water in oilfield operations **PHYSICAL PARAMETERS** **a) State:** The product should be a clear, free-flowing homogeneous liquid under ambient temperatures (8°C - 40°C) and should be free of any insoluble matter. **b) Solubility:** The product should be soluble in fresh water and saline (3000- 5000 ppm) produced Formation water in all proportions. **c) Compatibility:** The product should be non-corrosive, it must have pH between 6.5 and 7.5 and must be compatible with all materials of construction, including alloys. **d) Thermal Stability:** The product should be stable and effective even if the fluid treated with this product is exposed to a temperature of 70°C for up to 3 hours. **e) Shelf Life:** 12 months (Minimum) from the date of bid closing (for Advance Sample) / from the date of dispatch (for bulk supplies against any order) **PERFORMANCE: Laboratory Test Method** The performance of the advance sample / consignment sample will be tested in the laboratory on oil-in-water emulsions (formation water) collected from outlet of the Emulsion Treater, situated at any field installations. This oil in water test emulsion may normally contain

	up to 3000 PPM of emulsified oil. This emulsion will be treated with the advance sample / consignment sample, and the treated water will be aerated for 15 minutes and then allowed a quiescent time of 5 minutes. After this treatment process, the oil content in the treated water should not be more than 50 PPM, as measured spectrophotometrically. The test dosage of the advance sample / consignment sample normally would not exceed 50 PPM and shall be pegged with the minimum dosage of a reference sample, at which it yields the specified oil content in that test emulsion under identical test conditions.
147	Upper Kelly Cock and Lower Kelly Cock
148	Roto Hammer and Intensifier
149	LH Peripheral Milling Tool to run inside 5-1/2” Casing, Fishing tool
150	PREMIUM SAND SCREEN: 1.0 Construction: Multilayer Outer Shroud: HD Perforated Tube (Material: SS316L) Drainage layer: 20 mesh above & below Control Layer (Material: Inconel 825) Control Layer: ER Weave-Erosion Resistant Double Layer Dutch Weave (Material: Inconel 825) Inner Shroud: HD Perforated Tube (Material: SS316L) (m) Maximum OD: 3.500 Inch (n) Minimum ID: 2.441 Inch (o) Drift ID: 2.347 Inch (p) Screen Length: 108 Inch (2743 mm) (q) Overall Length: 120 Inch (3048 mm) (r) Blank Length (Box/Pin): 6 Inch (152 mm) (s) Pore Size: 250 Microns (t) Tolerance: High Accuracy for CH Operation (±10% max) (u) Mechanical Properties: Collapse Pressure: 3000 psi. Burst Pressure: 3000 psi. (v) End Connection: 3.5" VAMTOP Box Up & Pin Down with Bull Nose at bottom. 2.0 SAFETY SHEAR SUB: Suitable for 5.1/2 Inch Casing Tubing OD: 2.7/8 Inch Max OD: 3.5 inch Minimum ID: 2.441 Inch Drift ID: 2.347 Inch Metallic Material: L-80 13 Cr Non-Metallic Materials: HNBR (O-Rings) Thread Connection: 2-7/8" VAMTOP Box up x 3.5" VAMTOP Pin down. Release mechanism: Straight pull.
151	6" (152.4mm) PDC Bit suitable to drill soft to medium formation whose compressive rock strength varies from 9000 to 18000 psi in depth range from 4500 meters to 5700 meters, Features: Matrix Body, Replaceable nozzles, PDC cutter with high thermal and mechanical integrity, Gauge protection features Thermally Stable Diamond inserts on the gauge, Low torque feature (Depth of Cut control elements at every blade), Low Exposure Cutter, impact arrestors, back reaming cutters on gauge pads on each blade and spiral gauge pad. <u>Specifications:</u> Bit Size: 152.4mm (6") Bit Connection: 88.9mm (3-1/2") API Regular Pin Total Cutter Count: 25 or more

	Total Blade Count: 04 and more Cutter Size: 13mm Cutter Type: New Generation Premium cutters like Onyx-II/ Stay Sharp/ Select TMI/ ReflektorTM. Gauge Length: Minimum 1-1/2" Junk Slot Area: Minimum 4.5" Number of nozzles: 4 or more for efficient hole cleaning Replaceable Nozzles Size: As per manufacturer's standard to meet the drilling parameters stated below for optimum hydraulics. Drilling Parameters: a. Rotational Speed: 50-300 RPM (i.e., suitable for Rotary, SDMM and RSS) b. Flow Rate: 150-400 GPM c. WOB: 2-12 Ton. d. Hydraulic Horsepower: 1 to 6 (indicative feature) **Accessories:** 1. One set of extra nozzles complete with required 'O' rings, circlips etc. 2. One set of Nozzles Replacement Kit. 3. One no. of Bit Breaker. Domestic manufacturers bidding for the development of the product under INDEG and intending to carry out the threading of rotary shouldered connections through another manufacturer must submit the following: 1. A backup authority letter from the threader. 2. a valid API Spec 7-2 certificate of the threader, authorizing them for threading rotary shouldered connections. 3. The API-7-2 authorization should be valid at the time of bidding and the bidder should submit a confirmation from the threader that the API-7-2 authorization shall be kept valid till execution of purchase order on the bidder, if any, placed against this tender 4. No change in API approved threader other than those indicated in the techno-commercial bid will be allowed after placement of order.
152	Instrument & Gauges: Downhole Pressure & Temperature Gauges
153	Coil Tubing Downhole Equipment & Tools: • Coil Tubing End Connectors • Motor Head Assembly • Single/Dual Flapper Check Valve • Hydraulic disconnect. • Coil Tubing Mechanical disconnect.

	• Coil Tubing Jar • Coil Tubing Accelerator/Intensifier. • Coil Tubing Change Over Connection/Adapter. • Coil Tubing Nozzles • Coil Tubing Roto Hammer • Coil Tubing Slim Hole Motor • Coil Tubing Mills • Coil Tubing Wire Grab • Coil Tubing Overshot • Coil Tubing Spears • Coil Tubing Allegator Note: One item to be proposed at a time for development
154	Various Types of WSS Units: • Coil Tubing Unit • Hot Oil Circulation Unit • Multipurpose Pumping Unit • Nitrogen Pumping Unit • Fluid Pumping Unit • Acid Pumping Unit • Hydraulic Winch • HFF (Hydro Fracturing Fleet) Note: One item to be proposed at a time for development
155	Wireline Tools: • Matrix Acidization Tool
156	Fishing Magnet
157	Kelly spinner
158	Unitized Travelling Block & Hook System
159	11-3/4"OD FS wide catch Overshot
160	250 Short ton Elevator link
161	**Technical Specification for SPARES FOR PULSATION DAMPENER** **MAKE : HYDRIL** **MODEL : K-20-5000, PT.NO. 3111 330-07011.** 1 **Diaphragm, Nitrile** : Part No. 1005208-01 of HYDRIL PTE LTD : Part No. 230010 of OTECO INC : Part No. RR-311133007011 of RUBBER REGENERATING & PROCESSING CO 2 **Stabilizer** : Part No. 1005213(L/K OIL FIELD) : Part No. 230020 of OTECO INC : Part No. RRK2-004 of RUBBER REGENERATING & PROCESSING CO 3 **Plate, Stabilizer** : Part No. 1005214 of HYDRIL PTE LTD : Part No. 230030 of OTECO INC : Part No. RRK1/K2-008 of RUBBER REGENERATING & PROCESSING CO 4 **Screw, Stabilizer**

	: Part No. 1005215 of HYDRIL PTE LTD : Part No. 230040 of OTECO INC : Part No. RRK2-006 of RUBBER REGENERATING & PROCESSING CO 5 **Lock Washer** : Part No. 1900105-20 of HYDRIL PTE LTD : Part No. 230050 of OTECO INC : Part No. RRK2-007 of RUBBER REGENERATING & PROCESSING CO **If Bidder is an OEM of Pulsation Dampener, then bidder must categorically confirm that their spares are 100% interchangeable with our required spares.**
162	Measuring wire, 0.108-inch diameter (slickline), conforming to API STD. 9A (latest edition) with following specifications: Diameter: 0.108 inch (2.7432 mm) Tolerance on length: ± 0.001 inch (0.0254 mm) Running length: 20,000 feet (6000 meters) Application: Standard (not for H2S) Minimum Breaking Strength: 2109 lbs (9.381 kN) Maximum Breaking Strength: 2560 lbs (11.387 kN) Elongation in 10-inch, percent (minimum): 1.5% Torsions, minimum number of twists in 8 inch: 19 Material: Improved plow steel
163	6” Hexagonal Kelly A.1) HEXAGONAL KELLY MANUFACTURED, TESTED, CERTIFIED AND MARKED AS PER API SPEC 7-1 (LATEST EDITION) AND ISO 10424-1 & BEARING THE API MONOGRAM MARK, MANUFACTURED FROM AISI 4145 H API MODIFIED ALLOY STEEL FROM SPECIALLY STRAIGHTENED KELLY BARS, FULL LENGTH QUENCHED AND TEMPERED, BRINELL HARDNESS: 285-341, MINIMUM IMPACT STRENGTH VALUE OF 54 JOULES AS PER ASTM A 370 & ASTM E 23 OR ISO 148 CHARPY-V, AND WITH THE FOLLOWING SPECIFICATION: a) NOMINAL SIZE : 6" (152.40 MM) b) OVERALL LENGTH : 40 FT. (12.19 M) c) LENGTH OF DRIVE SECTION : 37 FT. (11.28 M) d) WIDTH ACROSS FLATS : 6" (152.40 MM) e) WIDTH ACROSS CORNERS : 6.812" (173.02 MM) f) INSIDE DIAMETER : 3.1/2" (88.90 MM) A.2) UPPER UPSET: 7.3/4" (196.85 MM) OD X 16" (406.40 MM) LENGTH WITH 6.5/8” API REG. LEFT HAND BOX-UP CONNECTION. A.3) LOWER UPSET: 7" (177.80 MM) OD X 20" (508.00 MM) LENGTH WITH NC-50 (4.1/2” API IF) RIGHT HAND PIN DOWN CONNECTION. A.4) THE CONNECTIONS SHALL BE WITH STRESS RELIEF GROOVES ON PIN END, BORE BACK BOX AND COLD ROLLED PHOSPHATISED THREADS, COMPLETE WITH PRESSED STEEL PROTECTORS ON BOTH ENDS. A.5) A GALL-RESISTANT TREATMENT OF ZINC OR MANGANESE PHOSPHATE SHALL BE APPLIED TO THE THREADS AND SEALING SHOULDERS OF BOTH THE UPPER AND LOWER CONNECTIONS. APPLICATION OF THE TREATMENT SHALL BE AFTER COMPLETION OF ALL GAUGING A.6) THE KELLYS SHALL BEAR THE API MONOGRAM MARK AND SHOULD BE SUPPLIED IN 8.5/8" (219.075 MM) OD STEEL SHIPPING SCABBARD AND SECURED PROPERLY.
164	Metal profile gratings: A specific type of metal grating product used mainly for strong, slip-resistant flooring, walkways, stairs, platforms.

165	15M Well Head with accessories. a. Pressure Rating: 15,000 psi (15M) b. Standard: API 6A c. Application: Onshore drilling wells d. Service: Drilling / well control e. Compatibility: Suitable for BOP stack installation		
166	18.3/4 5M Bottom Flange x 20.3/4 3M Top flange Adapter Spool –with API Ring Gaskets BX- 163		
167	**500 TON WIRE ROPE SPLICING MACHINE with following specifications:**		
	A	**500 Ton Full – Fledged Wire Rope Splicing Machine:**	
	1	Name of Equipment	Wire Rope Splicing Machine
	2	Tonnage	500 Ton Full – Fledged
	3	Min.Size of Wire Rope Can Splice	6 MM Wire Rope
	4	Max.Size of Wire Rope Can Splice	36 MM Wire Rope
	5	Working Pressure	315 kg/sq.m
	6	Type of Machine	4 Tie Rod / Four Pillar Type
	7	Working Direction of Cylinder	Up-Stroke
	8	Working of Cylinder	Double Acting
	9	Material of Construction of Machine	Mild Steel
	10	Type of Construction	3 Platen Construction 1) Bottom Platen 2) Top Platen 3) Middle Platen
		POWER PACK FOR 500 TON FULL – FLEDGED WIRE ROPE SPLICING MACHINE	
	1	Working pressure of Machine	315 kgf/sq.cm
	2	Type of Power Pack	Hand Operated Dual Pump Technology
	3	Make of Pump	Polyhydron or Yuken or Equivalent.
	4	Motor	10 H.P.
	5	Make of Motor	Crompton, Siemens, ABB, Hindustan or Equivalent
	6	Oil Reservoir	210 Litre
	B	**Die set for above machine:**	
	i	3/8 inch 9.525 MM	1Set / 3 nos
	ii	5/8 inch 15.87 MM	1 Set/3 nos
	iii	¾ inch 19.05 MM	1 Set/3nos
	iv	7/8 inch 22.22 MM	1 Set/3nos
	v	1 inch 25.4 MM	1 Set/3nos
	C	**Heavy Duty Wire Rope Cutter (MANUAL):**	
	1	Heavy duty wire rope cutter supplied along with the machine	Capable to cut 36mm diameter wire rope (36mm/1.1/2 inch)
	D	**Hydraulic Oil ENKLO-68 210 Litre**	
		Hydraulic Oil	Barrel Hydraulic oil ENKLO – 68 or equivalent to be supplied with machine
	E	**Installation & Commissioning**	
		Installation & Commissioning	The installation commissioning successful trail an training of 500 Ton Full – Fledged Wire Rope Splicing Machine at Oil India site Duliajan.
		NOTE : • The Starter Will Be Supplied Along With Machine Suitable For 10 H.P. Motor Along With Other Controllers. • Vendor to submit detailed catalogues & technical specifications of the product offered. • Inspection of Machine may be done at OEM Works prior to dispatch. OIL reserves the waival of this clause. • Performance Certificate of Previously Supplied Machine to be submitted with the offer.	
	SPECIAL TERMS AND CONDITIONS		

	1	1. The offered item must be brand new, unused and free from any kind of defect and to be warranted for 18 months from the date of receipt or 12 months from the date of commissioning. Bidder to confirm the same in offer.	
	2	Bidders must submit relevant catalogues, literature, drawings, technical specification sheet etc. along with offer, failing which offer may not be evaluated.	
	3	Bidders should furnish a separate recommended maintenance-spares list for two years operation with Part No and price for each spare.	
	4	Bidders shall indicate Net & Gross Weight, Dimension of the units and their best delivery schedule.	
	5	Bidders if not Manufacturer, must furnish valid letters of authorization with warranty from respective OEM, failing which offer may not be evaluated.	
	6	Bidders need to confirm that in the event of order, at least two sets of Operation & Maintenance Manual will be supplied free of cost with the consignment.	
	7	Bidder must fill up the technical matrix and submit the bid with their offer.	
	8	Sizes of die in sets is to be supplied 5/8 inch-01 set-in 03 no 3/8 inch - 01 set - -in 03 no ¾ inch - 01 set - in 03 no 01 inch-01 set- -in 03 no 7/8 inch -01 set – in 03 no	
	9	Manual Heavy Duty rope cutter : A. Manual Wire Rope/Cable Cutter suitable for cutting IWRC (Independent Wire Rope Core), IPS (Improved Plow Steel) & EIPS (Extra Improved Plow Steel) Wire Rope/Cable upto 50mm diameter used for oilfield application. B. Manual rope cutter Spares consisting of Cutting Blades, U-Blades, Seals/O-rings etc. as required for maintenance of the equipment: 1 Set for each Equipment.	
	10	Hydraulic Oil; Oil to be provided during supply and commissioning of 500 Ton wire rope splicing machine.	

168	Top Cement Plug for 10 3/4"OD, 60.7PPF Casing. Material: Hydrogenated Nitrile Butadiene Rubber (HNBR), Temperature: 20° C-180°C. Length of Plug should not be more than 270 mm & Colour: Black. Top plug must withstand hydrostatic pressure of 6000 psi Conventional **<u>Special Notes:</u>** 1. Rubber plug is used for carrying out cementing operation. In the well it would pass through the casing pipe up to a Length of 4500 mts. 2. The HNBR rubber part of the plug should be gripped tightly with the Aluminum core during the change of temperature from 20C - 180C. 3. After vulcanization, rubber will have shore hardness 70-80 DURO. 4. Rubber will not distort when coming in contact of cement slurry, drilling fluid (mud) or other cement additives. 5. Tensile strength of rubber will be more than 150 kg/cm2. 6. Elongation of rubber will be more than 350%. 7. Rubber will be high resistance to abrasion, temperature, pressure and chipping.	
169	Bottom Cement Plug for 10 3/4"OD, 60.7PPF Casing. Material: Hydrogenated Nitrile Butadiene Rubber (HNBR), Temperature: 20° C-180°C	

	Length of Plug should not be more than 270 mm & Colour: Red. Bottom Plug Rupture pressure 300–500 psi. Conventional. **Special Notes:** 1. Rubber plug is used for carrying out cementing operation. In the well it would pass through the casing pipe up to a Length of 4500 mts. 2. The HNBR rubber part of the plug should be gripped tightly with the Aluminum core during the change of temperature from 20C - 180C. 3. After vulcanization, rubber will have shore hardness 70-80 DURO. 4. Rubber will not distort when coming in contact of cement slurry, drilling fluid (mud) or other cement additives. 5. Tensile strength of rubber will be more than 150 kg/cm2. 6. Elongation of rubber will be more than 350%. 7. Rubber will be high resistance to abrasion, temperature, pressure and chipping.
170	**SPOOL, 11" X 10000 PSI TOP FLANGE, 13.5/8" X 5000 PSI BOTTOM FLANGE** Casing head spool, full bore opening having bottom flange of 346.075 mm (13.5/8"), 5000 PSI W.P. with API ring groove of BX-160, top flange of 279.4 mm (11"), 10,000 PSI W.P. with API ring groove of BX-158 and two Nos. of 46.0375 mm (1.13/16") studded side outlets with API ring groove of BX-151 in same horizontal plane but in opposite direction. The bottom flange should have preparation for removable, self-energized (pressure actuated) type FS Seal (Double seal) design secondary seal assembly, 5000 psi W.P to suit bottom preparation of Casing head spool and to seal off 244.475 mm (9.5/8") OD casing. The secondary seal element along with bit pilot shall be positioned to accommodate casing length of 105mm +/- 5mm from bottom surface of the Casing Head Spool. Flange should have packing arrangement & testing port. The spool should have suitable bit pilot for 244.475 mm (9.5/8") OD casing at bottom and to pass 215.9 mm (8.1/2") bit. The top flange should have preparation for hanger packer mechanism (slip & seal assembly) to hang and seal 139.7 mm (5.1/2") OD casing and 177.8 mm (7") OD casing. Dimensions, pressure rating and metallurgy should conform to API specification 6A (latest edition). Height of the spool from bottom flange to top flange is to be 660.4 mm (26") +/- 50.8 mm (2"), PSL-2, Material Class – 'AA' & Temp. Rating 'U'. Note: Marking of the items to be done as per relevant API. **Accessories :** A. Slip Seal Assembly (Primary Seal) B. X-type bushing (Secondary Seal) for Spool C. Plug, Tester having API 114.3 mm (4.1/2")

	IF Box-up & Pin-down Connection with 10 sets of extra seals for each plug tester. 1. Marking of the items to be done as per relevant API Specification. 2. 5.1/2" Slip & Seal Assembly (03530536) & X-type bushing should be in the following ratio with spool:- i) Single Spool (1) & accessories (2). ii) Two Spool (2) & accessories (3). iii) For more than two spools, ratio between spool and accessories shall be 1:1.2. Note: For 7" Slip & Seal Assembly (03530520), the ratio will be : i) Single Spool (1) & Slip & Seal Assembly (1). ii) Two Spool (2) & Slip & Seal Assembly (2). iii) For more than two spools, ratio between spool and Slip & Seal Assembly shall be 1: 0.3 (rounded to the next higher whole figure) 3) Plug tester should be in the following ratio with spool:- i) Single Spool (1) & Plug tester (1). ii) For more than one spool, spool & plug tester ratio is 2:1. Spool and all the accessories are to be procured from the same source.
171	**SPOOL, 13.5/8" X 5000 PSI TOP FLANGE,20.3/4" X 3000 PSI BOTTOM FLANGE** Casing head spool, full bore opening having bottom flange of 527.05 mm (20.3/4"),3000 PSI W.P. with API ring groove of RX-74, top flange of 346.075 mm (13.5/8"), 5000 PSI W.P. with API ring groove of BX-160 and two Nos. of 50.4 mm (2") API L.P. female threaded side outlets in same horizontal plane in opposite direction. The spool should have double grooves for FS Seal as a preparation of Secondary Seal at bottom flange to pack-off 339.725 mm (13.3/8") OD casing, slip seal assembly(Hanger Packer) at top flange to hang & seal 244.475 mm (9.5/8") OD casing and complete with suitable bit pilot for 13.3/8" OD casing at bottom & to pass 311.15 mm (12.1/4") bit. The bottom flange should have removable, self-energized type FS Seals (Double seal) as secondary seal packing arrangement and adequate testing ports. Dimension, pressure rating and metallurgy should conform to API specification 6A (latest edition). Height of the spool from bottom flange to top flange to be 609.6 mm (24") +/- 2". PSL-2 Material Class - `AA' & Temp. Rating `U'. Note : 1. OIL PO No and Manufacturer name to be visibly die stamped in Plug tester Body and Slip Seal Body. 01 Set of extra FS seal to be provided for each Spool. **Accessories :** (i) Slip Seal Assembly and (ii) Plug, Tester having API 114.3 mm (4.1/2"). IF Box-up & Pin-down Connection with 10 sets

	of extra seals for each plug tester. 2) Slip Seal Assembly, X-Type Bushing and Plug Tester should be procured in the following ratio with spool: For single Spool, Spool: Slip Seal Assy: Plug tester ratio # 1 : 2 :1 For Two Spool, Spool: Slip Seal Assy: Plug tester ratio # 1 : 1.5 :1 For more than 2 nos. of spool, Spool: Slip Seal Assy: Plug tester ratio # 1 : 1.25 : 0.5 3) The spool and the accessories are to be bought from the same source. Note: Marking of the items to be done as per relevant API specification.
172	"6" PDC Bit Bit Type : Hybrid (PDC + crushing inserts / cone elements) API Connection: 3-1/2" API REG Body Material: Steel / Matrix Gauge Length(in): 2-3 Blade Quantity: minimum 6 or more Cutter size: 13 mm primary cutter No. of nozzle ports: For optimum bit hydraulics Cutter: Premium cutter for enhance durability and impact resistant Gauge Protection: TCI / diamond gauge". Note: 1. Bits are to be manufactured and monogrammed as per API 7-1. 2. Manufacturer must have valid API 7-1 certificate and the same to be forwarded along with the offer. 3. Bit to successfully drill 70 meters of drilling in the basement formation.
173	Liquid PHPA
174	Advanced hole cleaning additive
175	Specialized loss control additives (Preventive)
176	Specialized loss control additives (Curative)

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