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Tender No. & Date	:	**SDG7505P18/07 dated: 23.03.2018**
Tender Fee	:	**INR 30,000.00 OR USD 500.00**
Bid Security Amount	:	**INR 15,77,000.00 OR USD 24,000.00**
Bidding Type	:	**SINGLE STAGE TWO BID SYSTEM**
Period of Sale of Bid Documents	:	**From 30.03.2018 to 09.05.2018; 15:30 Hrs(IST)**
Bid Closing on	:	**16.05.2018 (at 11.00 Hrs. IST)**
Technical Bid Opening on	:	**16.05.2018 (at14.00 Hrs. IST)**
Bid Validity	:	**Bid Should be valid for 120 days from bid closing date.**
Bid Bond Validity	:	**Bid Bond Should be valid up to 16.12.2018**
Performance Guarantee	:	**Applicable @ 10% of Order value**
Integrity Pact	:	**Applicable**

OIL INDIA LIMITED invites Global Tenders for items detailed below:

Item No./Mat. Code	Material Description	Quantity	UOM
10 0C000117	Design, Manufacturing & Supply of PLC based DC PCR for Drilling Rig application	1	No.
20	Installation Commissioning of Item No. 10	1	AU

List of Annexures Applicable :

Annexure- I:Technical Specifications, General& Special notes to bidders
Annexure- II: Bid Rejection & Evaluation Criteria
Annexure- IIIA: Commercial Check List
Annexure- IIIB: Bidder's Response Sheet
Annexure- IV: Certificate of Annual Turnover & Net Worth
Annexure- V: PP-LC Policy
Annexure- VI: Integrity Pact

Annexure-I

AA:: TECHNICAL SPECIFICATION FOR PLC BASED DC PCR FOR DRILLING RIG APPLICATION

1.0 SCOPE:

This specification covers the requirement for design, manufacturing, supply & commissioning of PLC based DC PCR **(Quantity required : 1 No.)** with Ross Hill AC-SCR system for drilling oil rig application along with commissioning spares, tools, tackles and two years **O E M** (Original Equipment Manufacturer) spares.

The PLC based DC PCR system should be capable of operating one 2000HP draw works (with 2 DC motors), two mud pumps (2 DC motors to each pump) and One Independent Rotary Drive (IRD) (1 DC motor).

The system shall also have provision for three 600 VAC feeder circuit breaker to provide power to one Top Drive, one STATCOM and one spare Mud pump (with 2 DC motors) respectively, and two feeder circuit breakers to provide power to Main Transformers (Located in the AC-PCR).

The general requirements of the system shall be as per this specification however for any other details, if required, supplier can ask for specific information from OIL INDIA. A layout diagram, showing the relative placement of the DC-PCR is provided in Annexure 3.

2.0 DIMENSIONAL DETAILS & CONSTRUCTIONAL FEATURES :

2.1 Dimensional details & operating environment :

PLC based DC power control room mainly consists of the following and shall have limiting dimensions as given below:

1. **DC PCR house** : 12.2 Meter (L) x 3.15 Meter (W) x 3.15 Meter (H); **Weight – 28 Tons + 10%**

   (Note: The skid should be four runner type & the spacing between the middle runners to be kept more for better stability. See “Skid” in Para 2.2.b below)

2. **Drillers Console** : 0.95 M(L) x 0.325 M (W) x 0.70 M (H)
3. **Mud Pump Console** : 0.60 M(L) x 0.340 M(W) x 0.50 M(H)

The SCR System shall be capable of delivering rated output continuously in the following environmental condition.

i) Max. ambient temperature : 45 degree centigrade

ii) Min. ambient temperature : Zero degree centigrade

iii) Altitude : 1000m above sea level.

iv) Relative humidity : 98%

v) Atmosphere : Dusty

2.2 General construction features of DC-PCR:

a) Body / House - The DC power control room should be an outdoor type, weather proof, transportable steel housing with self-supporting skid suitable for onshore oil field application and should not be weighing more than the limiting Dimensions above.

DC PCR house columns and ceiling frame to be constructed from structural steel seam welded. The outside shall be fabricated from twelve-gauge sheet steel. All corners are to be formed by bending, leaving no sheet edge exposed. Roof of the PCR should have

proper slopes so that no water logging takes place during rainy season. The entire body of the PCR should be contained within the skid (without any extension out of the base skid).

The roof of the PCR house shall be plain, without any protrusion. This is necessary for transportation of the PCR.

b) Skid - The Skid design shall incorporate at least 4(four) longitudinal channels with two mid channels kept sufficiently apart so that the unit can be placed evenly on narrow trailers (general width of trailers 2.4 to 2.6 meters only) with proper load distribution & balancing. Each longitudinal channel of a skid shall be of single length and shall have smooth finish underneath and curve finish at both the end, so that the skid can roll over smoothly on surfaces/truck body without any obstruction.

The skid so designed should be sufficiently strong and properly welded at joints and should be able to withstand shocks while being handled and transported over rough and slushy roads/locations. Height of the joint used for the longitudinal members should be minimum 20 cm. Sufficient provision should be available at both ends for lifting the entire PCR (bottom lift arrangement).

The skid shall be properly prepared, and painted with black coal tar epoxy paint with a final thickness of about 200 microns.

c) Thermal Insulation - Three of the PCR walls should be thermally insulated with three-inch thick polystyrene block insulation. Insulation of any other technology may also be acceptable, provided the insulating properties are same as polystyrene. The inside surface of the walls will be finished with a sandwich style insulating board three eight's of an inch thick with white pebble coating on the interior side and aluminum foil on the exterior side.

d) Panel line up can be provided in centre or wall attached on both sides with centre corridor. Supplier can offer their standard panel line up arrangement in the PCR. All components of the panels should be accessible from the front of the panels and bus bars should also be accessible for maintenance, if required.

e) Plug Panel - Plug panel for the Generator and DC motor cables to be provided on the front end plug panel (facing the DW). In case it is difficult to provide generator plug panel on front end then standard arrangement of supplier i.e. generator plug panel recessed type on the side facing power packs can be provided but height of the such plug panel should be around 1.5 mtrs from bottom of the PCR. The Plug Panel(s) should feature shutter or doors which can be closed/opened smoothly with all the cables plugged in, during normal running condition to avoid ingress of water inside the plug panels due to rain. Suitable fluorescent lighting fixtures should be provided for plug panel(s) lighting.

The PCR should have a recessed panel on the rear end to feed electrical equipments mounted on the AC/PCR such as the primary side of the transformers and other electrical equipments as required. Plug Panel for 4 x 20 core cable interconnection with AC PCR to be provided on the front end (DW end).

f) Indoor Lighting - Fluorescent lighting fixtures (2 x 40 W) to be provided for aisle lighting. Four- (2) 230 volt Phase – Phase duplex receptacles (suitable for Indian style plug pins) to be included, two at each end of the house. The PCR shall be equipped with emergency lights which shall adequately light up the PCR in the event of a blackout.

Additionally, EXIT signs to be also included at each end of the House. 230 V Phase-Phase AC power supply shall be supplied from AC PCR (MCC house) for DC PCR lighting and space heaters supply.

g) Doors - Two (2) stainless steel doors with anti-panic locks will be furnished - one at each end and on opposite sides of the house. Both doors shall be designed to open to the outside by pushing on the crash bar. Doors should have a rubber sealing lining. Two complete set of anti panic door locks to be provided with the PCR as spare.

h) Miscellaneous: The DC PCR should be designed for lifting from the bottom.

A rubber insulating mat should be provided over the full floor area of the house.

PCR to be provided with four brackets with suitable poles of height 3 meters at the upper four corners to hold flood light poles. The poles shall be detachable type.

2.3 Air-Conditioning

The PCR should have two (2) Nos Air conditioners each capable of maintaining 22+/-2 degrees centigrade temperature with one air conditioner operating (at outside ambient temperature of 45 deg centigrade at an RH of 98%) with designed full load operating conditions of the PCR. Supplier to decide TR of the AC units to keep the PCR inside temperature at 22+/- 2 Deg C at full load at 98% RH with only one AC unit running at an ambient temperature of 45 deg C. AC units can be split type. A/C units shall be mounted on the PCR skid /roof depending on the design.

Supplier to note that power supply for Air Conditioner shall be 415 VAC, 50 Hz, 3 Phase, 3 Wire (without neutral). This supply shall be drawn from the AC-PCR.

The Refrigerant used in the Air conditioner system shall be R407C/R410A/Chlorine free Refrigerant. The compressor shall be scroll compressor.

2.4 Finish

Surface preparation: Surface preparation before painting shall be done with shot blast to SA2.5 to achieve desired surface roughness. For outer surface, primer paint shall be epoxy primer, intermediate coat shall be high build epoxy paint and final paint shall be full gloss non-yellowing white paint with total DFT of 200 microns.

Skid shall be painted with black epoxy paint.

Over all dry film thickness of the painting should not be less than 8 mils (200 microns)

Surface preparation and painting shall be adequate for the harsh rainy & humid environmental conditions.

2.5 General internal cubicle construction features:

Following procedure should be adopted for the internal cubicle construction, wiring, tagging etc:

The enclosure sheet steel surface preparation shall include a three-step (minimum) procedure. Step one should be an acid washed using *Oakite Cryscoat 747LTS* at 120^{o}F. Step two, a rinse using standard city tap water. Step three should be a sealer rinse using *Oakite Cryscoat Ultra Seal, 27-RL-40* at 110^{o}F. The enclosure finish shall be ANSI 61 Light Gray polyester Ferro 5E-115 Series powder paint applied for a total dry film thickness of three mils / 80 microns. The powder application should be done with an IPSI Powder Coating Booth and Electrostatic “Nordson” Powder Spray Guns. The paint shall be oven cured at 400^{o}F for 20 minutes.

External equipment identification nameplates, control and instrument identification plates and operating and warning instruction plates should be anodized aluminum with markings using a photographic etching process and to be attached with corrosion resistant self-tapping screws or rivets. Component tag characters to be minimum 5 mm high**.**

Wiring is to be done with ITT Surprenant *Exane*. (*Exane* insulation being an irradiation cross-linked polyolefin compound, thermosetting in nature; and rated for 120^{o}C). Conductors are tinned copper, grouped in tied and secured bundles. The colour of insulation of all control wiring should be white or light grey. Wire within the cubicle is 1.5mm2 / 14 AWG minimum. Wire within guarded electronic enclosures may be sized to suit the lower current levels and higher wiring density often present in such devices. Wiring identification markers should appear at both ends of each wire which cannot be visually traced end to end. The wire numbers should correspond to numbers appearing on schematic drawings. All wiring to be routed to avoid sharp edges wherever possible and protected by bushings and/or auxiliary wrapping where it passes over sharp edges, through barriers and at service loops. All terminations should have margin to allow a minimum of one re-lugging operation.

Ring lugs to be used at all critical connections such as CT connections and main bus taps. Components, including modules and printed wiring boards to be connected using split lugs allowing removal of the device without removal of screws. No more than two wires or lugs to be attached under any one screw.

All terminal strips to have minimum 2 Nos spare terminals to accommodate any modification required during commissioning / operation.

Bus bars shall be of tinned copper. Hardware for all bus connections should be zinc plated and passivated hardware as per property class 8.8 and shall be provided with plain and spring washers with hex nuts as per standard design. All the bus bars should be marked with R, Y and B for ease in identification.

All items mounted in the cubicles should be accessible from the front and easy maintenance access should be available in the panels for removal and fitment of the items in the panels.

All the indication lamps should be high visibility LED type with LVGP (low voltage glow protection).

3.0 TECHNICAL DETAILS & SPECIFICATION:

The technical details & specifications covered under this part are broad technical details of the equipments required.

3.1 ENGINE / GENERATOR CONTROL PANEL (4 NOS).

3.1.1 Salient features of Engine / Generator controls :

The engine & generator control system should be suitable for 4 Nos. KATO/BHEL make 1430 KVA, 600V, 3-Phase, 50 Hz, 1000 RPM, 0.7 pf lag alternators, driven by Caterpillar D399 / 3512 engines / equivalent engines. Main bus bar to be designed for a minimum of 65 KA Fault current and it shall be able to take rated current continuously with simultaneous operation of all the drives and feeders.

Control panel should be suitable for engine provided with electrical actuator with 40 mA at no-load and 160 mA at full load extended up to 200 mA.

Control panel should be suitable for generator provided with electrical exciter field with excitation characteristics of 6 amps maximum current @ 125 VDC or 12 amps maximum current @ 63 VDC suitable for KATO/BHEL Alternators.

Power supply to exciter PCB (preferably identical to HGC part # P359T) shall be from a 600:0-120-240 VAC (at least 1.8 kVA) transformer.

Control panel to have tinned plated insulated, copper bus bar of adequate design suitable for 600V AC application as per international standard. Connection leads from generator panel to the socket board should be of adequate size to carry 1500A continuous current.

3.1.2 Each engine generator control panel to include minimum following equipment:

Item	Qty	Description
1	1	1600 AF 1600A SIEMENS/MERLIN GERIN/ABB ACB rated at 600V AC, 3-pole, 50 Hz, with adjustable trip, Draw-out type. Each breaker to be **manually chargeable**, electrically closed and electrically tripped and with auxiliary contacts. The Generator incomer circuit breaker to be furnished to be directly interchangeable with the SCR circuit breaker. The interrupting rating of the breakers will minimally be 65 Kilo Amperes. ▪ Auxiliary contacts for space heater.
2	1	Voltmeter, 0-750 VAC; DB40 size meter mounted on cubicle door

3	1	Ammeter, 0-2000 AAC; DB40 size meter mounted on cubicle door
4	1	Kilowatt Meter, (-)150-0-1500 kW; DB40 size meter mounted on cubicle door
5	1	Kilovars Meter, (-)150-0-1500 KVAR; DB40 size meter mounted on cubicle door
6	1	Generator Exciter Amperage; meter mounted on cubicle door
7	1	Actuator Amperage; meter mounted on cubicle door
8	1	Energy-consumed meter in the form of Kilowatt Hours Digital type with LCD screen
9	1	Six- (6) channel RTD meter to indicate generator winding temperature with alarm output relay contact to trip circuit breaker upon high temperature reading. RTD meters should be suitable for both 10 ohm & 100 ohm RTDs with selector switches. In case this is not possible, **supplier to furnish four- (4) RTD Meters factory calibrated for 100-ohm platinum as spares**
10	1	Engine Control Switch/Pushbutton **"**OFF-IDLE-RUN "
11	1	Generator **"RUN"** Indicating Lamp (White) LED type
12	1	Generator **"ON LINE"** Indicating Lamp (Red) LED type
13	1	Generator Space Heater Pilot Lamp. LED type
14	1	Reversed Power **"TRIP"** indicating lamp LED type
15	1	Manual Engine Speed Adjust Potentiometer on cubicle door
16	1	Manual Voltage Adjust Potentiometer on cubicle door
17	1	Analog AC Module of Hill-Graham / Ross Hill design. Supplier to furnish the details of AC module with the offer. Ross Hill standard Analog AC Modules with external exciter PCB for the Generator panels shall be acceptable to ensure interchangeability with other AC modules of OIL's rigs. Analog AC module must contain both voltage regulator and engine speed governor with kW and kVAR load sharing with standard safety features.
18	1	Exciter PCB Ross Hill design (to be mounted separately and preferably identical to HGC part # P359T), if required.
19	1	Phase rotation relay for phase sequence check on the generators with interlocking for synchronisation
20	1	Set of transformers, resistors, fuses, relays etc
21	1	Engine protection circuit for following : Engine Overspeed with engine shutdown circuit Engine low lube oil pressure with breaker trip circuit Engine High water, Air, Oil temperature circuit with breaker trip. Engine fault should have audio visual alarm.

One Set of 2 x 12V DC dry type rechargeable batteries for Engine & Generator safety system along with battery charger to be provided in one of the generator panel.

3.1.3 SYNCHRONIZING SYSTEM :

The Synchronizing System shall be designed to manually synchronize the selected generator.

Item	Qty	Description
1	1	Synchronizing system consisting of components and a sync section

		display panel which will be conveniently located to easily synchronize each Engine/Generator through high visibility sync lights and synchroscope. The sync section to have the following auxiliary controls and components:
2	1	Frequency meter and associated selector switch selectable to Main Bus and Generators 1/2/3/4
3	1	Voltmeter and associated selector switch selectable to Main Bus and Generators 1/2/3/4
4	1	Sync Switch: GEN1 – GEN2 – OFF – GEN3 – GEN4
5	1	Basler Veri-Sync Relay
6	1	Synchroscope
7	SET	Synchronizing lights for synchronization with Generator Circuit Breakers.

Sync Switch and Veri-Sync relay should be mounted in one of the Gen panels whereas Frequency meter, Voltmeter, Synchroscope & Sync lamps should be mounted in a separate box/panel visible from all the Generator panels.

3.2 FEEDER PANEL - 1 (One) No

A separate feeder panel should be provided to house following items:

3.2.1 TRANSFORMER FEEDER BREAKERS

The feeder panel to be consisting of the following main equipments:

Item	Qty	Description
1	2	1000 - 1200 Amps, 600 Volts, 3-Pole, manually operated Siemens / Merlin Gerin/ABB, MCCBs Type feeder circuit breakers having breaking capacity of 65 KA each for 2 X 600 KVA 600/415V 50 Hz, Delta/Star Dry Type Power Transformer for powering auxiliary AC loads and rig lighting system. MCCBs should be settable from 0.4 x 1 of rated current with electronic release. The interrupting rating of the breakers will minimally be 65 Kilo Amperes.

3.2.2 POWER LIMIT CONTROLLER

The Power Limit Controller is to be provided to monitor the KW & "I" Total of each of the engine –generator sets. If either of these parameters reach its limits, the Power Limit Controller to reduce the power being delivered to the loads, so that the load on each generator is held at its limit until the loads on the SCR drives are reduced (by other action) to a level below the generator limit. The Controller will allow for adjustment of each parameter independent of the other.

The range of adjustment will allow the Power Limit to be lowered to 80% or raised to 110%. The Controller will have built-in under-frequency circuitry, which shall keep the engines operating when sudden engine problems, such as bad fuel, may cause the engine to shutdown. A meter on the Drillers Console is to be provided to indicate percentage Power Limit. A warning lamp is illuminated on the Drillers Console at a load level just below the power limit.

3.2.3 HANDS-OFF CIRCUIT (HOC)

The HOC shall be designed to supply power for the engine actuator starting circuit, suitable for supplying CAT D399 / 3512 engines with an actuator current of 40-200 mA and the pulse pick-up circuit respectively in each of the AC generator control modules. The items to be included shall be as follows:

Item	Qty	Description
1	1	CPT fused on the primary and secondary.
2	1	Single-phase diode bridge.
3	1	Capacitive DC filter

4	1	Voltage clamping circuit.
5	2	12V Batteries dry rechargeable type
6	2	Circuit breakers—DC feeders.

3.2.4 GROUND FAULT DETECTOR CIRCUIT (in the 600 VAC Circuit):

Ground Fault detector circuit shall mainly consist of the following:

Item	Qty	Description
1	1	AC & DC Ground Fault detector PCB
2	3	AC ground detection lamps – One lamp per phase
3	1	600 VAC ground test button
4	1	AC/DC ground fault relay
5	1	Percent DC ground detection meter
6	1	Percent AC ground detection meter

Audio Alarm in PCR in addition to indication at Driller's Console will be provided for ground fault system.

Ground fault circuit should be of standard design of OEM connected to each phase and to the ground through individual phase lamp (filament type). In case of AC ground fault the phase which is grounded will have lower illumination in the lamp connected to that phase and in DC ground fault all the 3 lamps will glow brighter.

Any other better arrangement shall be acceptable if furnished with full details.

3.3 FEEDER BREAKER - 3 (Three) Nos:

Three nos. of AC Feeder breaker for supplying 600 VAC power to external drives from main bus shall be provided at a convenient location in the PCR for top drive,statcom and third mud pump respectively. The feeder breaker shall be as per following details.

Item	Qty	Description
1	3	1600 AF 1600A SIEMENS/MERLIN GERIN/ABB ACB rated 600V AC, 3-pole, 50 Hz, 65 kA with adjustable trip, Draw-out type. Breaker to be manually chargeable, electrically closed and electrically tripped and with auxiliary contacts. The Feeder breaker to be furnished to be directly interchangeable with the SCR and generator circuit breakers. UV coil shall not be required for the Feeder breaker.

3.4 SCR CONTROL PANEL (5 Nos).

3.4.1 Salient features of SCR panels :

The SCR Control system and bus bar shall be suitable for driving two DW motors, two Mud pumps (each mud pump driven by two DC motors), and one IRD motor. All motors will be 1000 HP, 750 V DC, separately excited shunt wound motors ***BHEL 4903CX / GE752R*** models. Design should have provision for assigning at least 2 drives (motors) from the one SCR panel (see section 3.6 "SCR assignment" below).

SCR controlled drive panel should be of standard Ross Hill design with analog DC regulator module for shunt motors with regenerative / dynamic braking.

Control panel to have tinned plated insulated bus bar of adequate design suitable for 600V AC application as per international standard.

Hardware for all bus connections should be zinc plated and passivated hardware as per property class 8.8 and shall be provided with plain and spring washers with hex nuts as per standard design. **Each SCR panel to consist of the following main equipments:**

Item	Qty	Description
1	1	1600 AF, 1600 A rated SIEMENS/MERLIN GERIN/ABB ACB rated 600V AC, 3-pole, 50 Hz, 65 KA with adjustable trip, Draw-out type. Each breaker to be manually Chargeable, electrically closed and electrically tripped and with auxiliary contacts. **The SCR Converter circuit breaker to be directly interchangeable with the Generator incomer circuit breaker.** The SCR breakers will have the same auxiliaries as the generators.
2	1	Voltmeter, 0-1000 V_{DC}
3	1	Ammeter, 0-2000 A_{DC}
4	1	SCR **"ON"** indicating lamp, (Red) LED type
5	1	6-pulse, 2000 amp @ 750 V_{DC}, vertical air cooled SCR Bridge. The bridge shall be protected using semiconductor type fuses with form C contacts, which are activated when the fuse opens.
6	1	Surge Suppression **"ON"** Indicating Lamp (Green) LED type.
7	1	AC bus surge suppression module to clamp any transient voltages that may be damaging to the SCR devices. The surge suppressor to consist of a fused enclosure of metal oxide varistors (MOVs). Each SCR panel should have individual surge suppression MOVs connected in Delta mode.
8	1	Set of DC assignment contactors. DC assignment contactors should be suitable to break full load current at rated power. GE Series IC2800 or Siemens Type 700 contactors shall be provided. Supplier to furnish full details of the proposed contactors.
9	1	Cubicle Space Heater. (To be “ON” when SCR is not in operation.)
10	1	Analog DC Module of Ross Hill design for shunt motors and regenerative braking for firing control of the SCR drive. Full details of analog DC modules to be furnished along with the offer.
11	1	3 phase 600 V AC twin blower for cooling of the SCR bridges. The motor is to be started with a manually operated switch and SCR should be assignable only if the blower is running. In case blower failure takes place during SCR working, SCR breaker to trip. **The rating of the blower must be adequate for proper cooling of the SCR bridge**. Bidder to mention the rating of the blower motor with the offer.
12	1	One logic indicator PCB with LED to show the flow of -14V signal in the assignment circuit of the SCR drive

Armature reversing feature should be available in the system for the DWA, DWB & IRD motors. Cutler Hammer/NOV/Siemens or equivalent make reversing contactor to be used in the SCR panels for DWA, DWB & IRD motors reversing.

Field interlocks such as field loss contacts etc to be included in the system design so that assignment can not be completed in case field loss relay does not pick-up.

Drive / assignment fault alarm should be available in the DC PCR with external electrical HOOTER.

3.4.2 Draw works Braking

a) Regen Braking - The system shall be designed to provide regenerative braking facility on DWA motor to slow the Draw works motors from full speed to a preset cathead speed within 10 to 15 seconds after the foot throttle is released. The power generated by the free wheeling DC motors is to be fed back into the 600 volt bus and absorbed by the engine-generator sets that are on line. During normal operation of the Draw works the regenerative brake should be non-operative. If, at any time, the motor speed is higher than the DW throttle setting and the foot throttle is not in use and no DW clutch is engaged (to be achieved through high & low clutch pressure switches in Driller's Console), the brake circuit to engage and reduce the motor speed to the hand throttle setting.

There should be maximum current limit feature in the DC Module to prevent over speeding of the engine-generator set during re-generative mode. Controls shall ensure that change over of Forward-Reverse Contactors from Forward to reverse and vice-versa & assignment contactors On-OFF-On take place at Zero current.

b) Dynamic Braking - Alternatively, system may be designed with dynamic braking (Resistor bank based), in which case, bidder to quote for the Resistor Bank (forced Cooled), as well as Brake control panel (If required), and all accessories.

3.5 FIELD SUPPLY CUBICLE

a) The field supply cubicle should include Ross Hill type standard diode & thyristor Field Supply sections for the 7 DC motors. The equipment to be consisting mainly of the following:

Item	Qty	Description
1	3	Diode Passive field supply for DWA , DWB & IRD motors
2	2	Diode-Thyristor based Dual motor Active field supplies for Mud Pumps MP1 & MP2
3	2	Field supply regulator PCB for active field supplies for MP1 & MP2
4	7	HOA switches for field supplies
5	7	Field current ammeters for all motors
6	5	Padlock Lock Out Devices
7	2	Selector Switches for each pump (MPA+MPB / MPA / MPB)
8	2	POTs for A or B single motor operation current command / feedback
9	2	Field imbalance illuminated reset push buttons for dual motor field supplies

b) Mud pump field supplies shall be designed to facilitate operation of mud pump motors together or individually (A or A+B or B). Corresponding Current limits for mud pump operation with one motor or two motors will be automatic adjustable as per field supply assignment through DC Modules.

c) Field regulator PCB should be able to regulate the B motor SCR field supply with respect to the feedback command signal of Diode field supply of A motor in case of active field supply unit for MP1 & MP2.

d) For single motor operation of MP1 or MP2, current command / feedback signals should be generated from external POTs for field supply regulator PCB.

e) Field supply transformers should have tappings for adjustment of field current of the DC motors. Required fused protection for transformer primary and secondary should be provided.

f) Field supplies should be able to supply 57 Amps DC (OIL Motor) to the DC motor shunt field windings in hot motor condition. However the field currents & voltage should be adjustable to match with the DC motor requirements of BHEL 4903CX / GE752R models.

g) DC motor Field supplies to have Hands-Off-Auto (HOA) switch to facilitate energizing of field supplies without drilling function is assigned. In Auto mode required MCC interlocking should be built into the field supply circuits to ensure that field is energized only after DC motor blower picks up. An audible alarm along with an indication shall be activated inside the DCPCR and Drillers console respectively, in case of failure of Blower motor of the assigned drive.

h) Hard wired interlock of Field loss relays should be used for positive interlocking in all assignment circuits.

i) All field supplies shall have independent DC ammeters on the cubicle door.

3.6 SCR Assignment:

There should be individual assignment switches for each of the SCR panel. All assignment switches shall be of 3 position heavy duty type with vertical position of knob as OFF position. Each SCR unit shall be able to drive two different functions. Following is the proposed assignment:

	Left position	Center	Right Position
SCR1	DWA	OFF	MP1
SCR2	MP1	OFF	DWB
SCR3	IRD	OFF	DWA
SCR4	DWB	OFF	MP2
SCR5	MP2	OFF	IRD

3.7 EXTERNAL CONNECTIONS:

The rig external connections from the DC PCR to different loads and drives should be through easily removable type plug & receptacles and following should be taken care of in the design:

3.7.1 External power connections to Alternators, Top drive feeder, Statcom feeder, Mud pump feeder and Transformers in AC PCR and DC motor power connection to be done through single pole Pyle National make power plug & sockets of suitable rating. Plugs & sockets **(crimped type)** should be suitable to accommodate 300 sq mm flexible copper cable with built-up conductor dia of 26 mm & OD of 35 mm (+/-1 mm). The alternator socket board should be provided with adequate nos. of sockets per phase to carry 1500 A continuous current per phase.

3.7.2 Each of the actuator & MPU signals shall be through two separate 1.5 sq mm x 4 core cables. The exciter field supply, RTD and engine protection circuits shall be connected through a 2.5 sq mm x 20 core cable. Space heater connection for Alternators shall be through MCBs in the distribution panel. The pin configuration for 20 core cable Alternator control connections is enclosed as Annexure-1. Pyle National make star line plugs & sockets **(crimped type)** should be used for Generator control connections for 3 core & 20 core cables.

3.7.3 Exclusive 20 Pin plugs & sockets to be provided for shunt fields of DC motors & control connections. The DC motor field supplies to run through 2 x 6 cores of 2.5 sq mm x 20 core cable. Space heater connections, air flow switch & lock out switch connections to the DC motors shall also be through this 20 core cable. The pin configuration for 20 core cable for DC motor control connections is enclosed as Annexure – 2. Space heater connection for DC motors shall be through MCBs in the distribution panel**.** Pyle National - Star Line

make plugs & sockets **(crimped type)** should be used for Motor control connections for 20 conductor cables.

3.7.4 All control interconnections for AC PCR shall be through 2.5 sq mm x 20 core cables. Pyle National - Star Line make plugs & sockets **(crimped type)** should be used for interconnections for 20 core cables.

3.7.5 The Plug Panel(s) should feature shutter or doors which can be closed/opened smoothly with all the cables plugged in, during normal running condition to avoid ingress of water inside the plug panels due to rain.

3.7.6 Suitable fluorescent lighting fixtures should be provided for plug panel(s) lighting..

3.7.7 To avoid damage due to sharp bend and injury to the cable due to its self weight, sockets should be mounted on socket board of slant stair case design.

3.7.8 Earthing cable from earth bus bar should be brought out up to the socket board for termination at the earth pit.

3.7.9 Sufficient redundancy should be provided in sockets consisting of each ratings by quantity proportion and at least one for each rating. PCR socket board to have extra socket holes of each rating with blank covers for use to meet exigency.

3.7.10 Air-conditioner incomer supply from AC PCR shall be through a 4-pin 100 Amps Appleton plug & socket. DC PCR lighting & space heater supply from AC PCR shall be through a 4 pin 60 Amps Appleton Plug & socket.

3.7.11 10% extra plug and sockets of each type & rating shall be supplied as loose spare items by the supplier with minimum 1 No. of each type. Supplier to furnish list of plugs & sockets used and spare qty supplied. This should be finally included in the 2 years spares list by supplier.

3.7.12 Oil India shall supply all external cables except the PLC communication cables for Driller Console & MP Console. PLC communication cable of 120 meter length for Driller's Console and 30 meter length for Mud Pump Console shall be in supplier scope and to be supplied with the DC PCR. One PLC cable each of the above lengths should be supplied as spare for both Drillers console and mud pump console. Suitable repeaters for the PLC cable shall be incorporated in the design for effective transmission of signal over a long distance. The termination of all external cables to the loose plugs & sockets supplied by the supplier shall be the responsibility of Oil India. The outside diameters of cables for Plug grommet sizing is furnished by Oil India in respective Annexure.

3.8 SPACE HEATERS

The space heater supplies to be suitable for 500 W, 230 VAC rating of the space heaters. Space heaters shall be powered through 230 V AC Phase-Phase 3 wire supply from AC PCR (MCC house).

Space heater connections shall be required for all Seven DC motors & four alternators and to be provided thru the 2 Pole MCBs in the distribution panel. DC motor space heaters will remain energized, if DC motor blower is not operational. Alternator space heaters to remain energized, if Alternator is not operational.

All cubicles shall have their independent space heaters.

Any other method proposed by supplier for supply of Space heaters meeting the functional requirement can be accepted, if full details are provided by supplier.

3.9 PLC CONTROL PANEL:

3.9.1 The programmable logic control panel has to perform the following functions for over all SCR control, inter lock with accessories and monitoring.

The System Host PLC shall be a high speed, versatile modular PLC. The PLC to be used shall be suitable for serial communication with remote consoles and other rig components and devices.

3.9.2 The PLC shall incorporate the SCR bridge assignment logic.

The PLC system shall have provision for twisted pair cable for communication with the remote Racks in Driller & MP Console. A signal repeater shall also be provided in the design. The controls including PLC should be suitable for a cable length of up to 120 meters form DC/PCR to Driller Console to meet cluster drilling requirement.

The PLC shall have provisions for interfacing with the LAN. Interface with controls and indicators of the driller's console shall be via the field I/O units. PLC shall provide status, alarm and diagnostic tools via local annunciation functions. PLC will provide automatic starting of Mud Pump and Draw works auxiliaries with indicating lights on console. A provision is to be kept for future expansion (of the third mud pump). Suitable PLC cable shall be provided from the PLC cubicle to the socket board (DW End) of the DC PCR for future use of the third mud pump. The supercharger pumps shall be started & stopped manually from Driller's Console.

There is no remote PLC in the AC/PCR for MCC interlocking for the DC motor control logics. All PLC relay inputs/outputs for auto starting of DC motor auxiliaries and alarm functions through MCC in AC PCR should have interface relays in PLC cubicle with adequate contact ratings.

Fault storage facility should be available through the PLC in the system with built-in self diagnostic features.

3.9.3 **Touch Screen Display** - PLC shall have touch screen for all miscellaneous indications for all generators & all SCR panels, indications for various drives, ground faults, power limits, Driller assignment, Hour meter, current & voltage metering, trending of historic data & faults etc. See Clause 3.9.6 (below) for full details.

3.9.4 **Bypass Mode** - The PLC shall have a bypass switch **(FOR MANUAL BACKUP MODE)** to allow for minimum assignment in the event there is a failure in the PLC.

The bypass **(FOR MANUAL BACKUP MODE)** will require a twenty- (20) conductor cable to be connected between the PCR and the Driller's Console. The assignment furnished in the bypass mode allow one- (1) drive per SCR bay when the by pass mode is selected. Since there are 5 SCR cubicles there could be 5 DC Motors available. In PLC By-Pass mode following assignment should be available :

SCR 1	SCR 2	SCR 3	SCR 4	SCR 5
DWA	**MP1 (MP1A & MP1B motors)**	**DWB**	**MP2 (MP2A & MP2B motors)**	**IRD**

PLC cubicle should be provided with CVT of adequate rating to avoid any effect of SCR system harmonics. In the bypass mode apart from the normal operations, the meters (DC ammeters and voltmeters of the SCR inside DCPCR and Drillers console) of the assigned drive, along with Mud pump console and foot throttle should be fully functional.

3.9.5 PLC SYSTEM :

The PLC system shall mainly consist of the following:

Item	Description
1	Siemens S7-300 Modular Mini-PLC

2	32 Bit, Fixed & Floating Point CPU
3	Up To 1024 Digital Inputs / 1024 Digital Outputs
4	Up To 256 Analog Inputs / 256 Analog Outputs
5	Complete Instruction Set With “Built-In” Functions
6	Built-In Self Diagnostics
7	System Status & Alarms When Used With Remote Display Screen
8	Fiber Optic Communication Capability
9	One Remote Graphic “Touch” Screen Display

Note : Above is for reference only. Supplier to furnish full details of PLC offered.

3.9.6 TOUCH SCREEN :

A touch screen / soft button display screen should be provided in the PLC cubicle / Field supply cubicle. The following represents data to be displayed preferably on multiple screens.

MISCELLANEOUS INDICATORS
PLC System Communication OK
Generator ON (For each Generator)
Ground Fault
Power Limit
Driller Console Assignment.

SCR INDICATORS (To be repeated for each SCR panel)
SCR ON
Bridge Temp Switch B
A Blown Fuse
Bridge Current Gauge
B Blown Fuse
Bridge Volts Gauge
C Blown Fuse
Speed Reference
Contactor Assignments
% Power Limit

MUD PUMP INDICATORS (To be repeated for each Pump)
MP 1-2 Field ON
MP 1-2 Chain Oilier ON
MP1(both A & B motors) Blower ON
MP 1-2 Liner Wash ON
Charging Pump 1 ON
Charging Pump 2 ON
MPA Armature Current
MPB Armature Current
MPA Field current
MPB Field current

DRAWWORKS INDICATORS (Repeated for Each Motor)

DW Field ON
DW Field current
DW Blower ON
DW Lube pump ON
DW Armature current

IRD INDICATORS

IRD Field ON
IRD Field current
IRD Blower ON
IRD Lube pump ON
IRD Armature current

GENERATOR CUBICLE INDICATORS (Repeated for each Generator Cubicle)

Running Hours for Power pack

3.10 DRILLER CONSOLE:

3.10.1 Driller Console construction :

The Driller's Console to be a pressurized stainless steel enclosure, constructed suitably for installation in Class 1, Division 2 (IEC Zone 2) locations as per International standard.

The console should be constructed of 12 gauge No. 304 stainless steel and the hand throttle wheels of solid stainless steel. Each hand wheel will drive two (2) independent potentiometers to provide 100% backup of the throttle function. The console should be water tight and include a gasketed door.

a) **Continuous Purging** - The console should be equipped with approved purging for application in a Class I Division 2, Group D Hazardous area. A rig air supply fitting *(1/4" BSP male threads)* will be provided for connection to an external 85 to 150 PSI rig air supply. As rig air supply is normally contaminated (with moisture and oil) an air drier and filter assembly shall be supplied along with the driller console separately. An internal pressure regulator in the console is to be provided to maintain the internal pressure of the Console.

b) The console to have the following standard equipment and features:

Item	Qty	Description
1	5	Assignment Switches SCR 1-5
2	1	Rotary Table Current Limit POT
3	2	Draw works Speed Control (Hand throttle)/IRD Speed control (Hand throttle)
4	2	Draw works Switch "FWD-OFF-REV"/ IRD Switch "FWD-OFF-REV"
5	2	Mud Pump Speed Controls (Hand throttle)
6	2	MUD PUMP "On-Off" selector switch
7	2	Super charger "Start-Stop" selector/ pushbutton switch
8	1	Mud Pump Console / Driller's Console selector switch
9	1	"E" Stop Push button # 1 – Shuts off all drives. Should be fitted with a cover / flap to prevent accidental activation.
10	1	"E" Stop Push Button # 2 – Shuts off all Generators. Should be fitted with a cover / flap to prevent accidental activation.
11	1	Alarm Silence spring return switch
12	1	Lamp test spring return switch
13	1	PLC "BYPASS" Switch
14	1	RT Override Push Button
15	1	Power Limit Meter 0-100%
16	4	Generator "ON" Lamps (Red)
17	5	SCR "ON" Lamps (Green)

18	3	Draw works DWA & DWB Blower "ON" Lamp (Red) */IRD Blower ON
19	1	Draw works lube pump "ON" Lamp (Red)
20	1	IRD "ON" Lamp - Red
21	2	Mud Pump Auxiliaries "ON" Lamps (Red) *
22	1	Super Charger "On" Lamp (Red)
23	1	Power Limit Lamp (Amber)
24	1	Console Purge Loss Lamp (Amber) *
25	1	Ground fault lamp (Yellow)
26	1	Audible alarm activated for items marked (*)
27	Lot	Plugs & receptacles for console connection
28	5	DC Current Meters for amperage of Drilling motors (MP1, MP2, DWA, DWB & IRD) 0-2000 A
29	1	RT Torque meter
30	1	Set of relays, fuses, sockets etc
31	1	PLC remote rack
32	1	DW / RT Clutch pressure switch
33	2	DW Hi / Low clutch pressure switches.
34	1 set	IRD controls including hand throttle

Note: Any other item required for Driller Console as per system design to be included by supplier. Provision for the third mud pump to be kept in the drillers console including space for the hand throttle, control cable and socket, PLC Communication cable, indication lamp, meter and on-off selector switch etc.

c) Control circuit shall be designed so that Super Chargers can be made operational irrespective of mud pumps assignment. Mud pumps can be made operational without working of super chargers.

d) Emergency Stop Push-Buttons - The "E" STOP PB# 1 will trip all SCR breakers and will cut off the power to the console. All DC motor blowers and IRD/Draw-works/MP auxiliaries also should stop. The "E" STOP PB# 2 will trip all Generator Breakers, and cut off total Electrical Power supply to the Rig. Both the "E" STOP push buttons shall be hard wired and fully operational in the PLC BYPASS mode.

e) PLC "Bypass" mode - When PLC Bypass mode is selected one dedicated SCR for one DC motor shall be available. The assignment to be provided is one (1) motor per SCR bay. Since there will be 5 SCR cubicles there could be 5 drilling motors available for emergency operation in manual mode. In the bypass mode apart from normal operation the meters (DC ammeters and voltmeters of the SCR inside DCPCR and Drillers console) of the assigned drive, along with Mud pump console and foot throttle should be fully functional.

f) Provision for Running RT from DW – The RT may be run from DW, in case of failure of RT drive or any other reason. The DW / RT selection should be through a Pressure switch in the Driller Console. Pressure switch to pick-up when driller operates Rotary Clutch as per standard Ross Hill design. There should be separate pressure switches for Hi & Lo clutch engagement sensing and regenerative brake should operate only when no clutch is engaged.

3.10.2 Driller's Foot throttle

The foot-throttle to be manufactured of 12 gauge No. 304 stainless steel throughout, built to withstand the environment normally encountered on the rig floor. It should contain dual

stainless steel return springs to provide a fail-safe return to the off position in the event of the single spring failure. Provisions for a dry air connection to the electrical compartment are to be included. The foot throttle connects directly to the Driller's console through a three-conductor cable. A spare plug is to be provided with the foot throttle. The foot throttle shall be fully functional in the PLC BYPASS mode

3.11 MUD PUMP CONSOLE:

The mud pump console should be manufactured of 12 gauge No.304 stainless steel and the hand throttle wheels of solid stainless steel. Each hand throttle will drive two (2) independent potentiometers to provide 100% backup of the throttle function. The console will be watertight and include a gasketed door. Purging is not required as MP console will be placed in a safe area.

The console shall include the following main controls and indicators:

Qty	Description
2	Mud Pump Speed Controls Hand Throttle
2	Mud Pump "ON-OFF" Switches
2	Mud Pump "ON" Indicating Lamps (Green)
2	Mud Pump DC Current meter 0-2000A
1	PLC remote rack
Lot	Plugs & receptacles for console connection

Note: Any other item required for MP Console as per system design to be included by supplier. Provision for the third mud pump to be kept in the mud pump console including space for the hand throttle, control cable and socket, PLC Communication cable, indication lamp, meter and on-off selector switch.

It should be possible to run mud pumps up to full speed through MP Console. Operation through MP Console should be possible only if MPC / Driller's Console switch at Driller Console is in MPC mode.

4.0 SPARES, TOOLS & TACKLES:

Following tools, tackles & spares to be supplied by Bidder; other than specified against any specific clause earlier in this document.

4.1 TOOLS & TACKLES :

Qty	Description
	SURVIVAL KIT CONSISTING OF THE FOLLOWING -
2	Pyle-National Plug and Receptacle Crimping Tools
1	Hydraulic Crimping Tool for Generator and DC Motor 300 sq mm cables
1	Tool Box with Hand Tools applicable to a rig up
1	Laptop with Windows 10 or later with software for programming the PLC
1	PLC-SIE, Software for PLC with license
2	PLC-SIE, Cable/Adptr, USB, PMB
1	Fluke Multi-meter model 175
1	Secondary injection test kit for Gen/SCR/Top Drive/Transformer feeder breakers
1	Jigsaw
1	25 Piece Jigsaw Blade Kit
1	300 sq mm Cable Cutter

1	Set of Pyle-National Pin Extraction/Insertion Tool Kit
2	Taparia Box wrench set
1	Hand drill machine,800 Watt,Bosch
2	Anti panic door locks
1	Megger MIT 300 IR tester

***NOTE**: The laptop will have the PLC program software installed along with the PLC system logics program. Appropriate storage (CD / Flash Media) with the required software (s) also to be supplied loose.All software's supplied shall be original and licensed to OIL India without expiration date. No trial version/evaluation /shareware copy of the software will be accepted.*

4.2 COMMISSIONING AND OTHER RELATED SPARES

The following list of spares to be supplied with the PCR

4.2.1 COMMISSIONING SPARES FOR SCR SYSTEM IN PCR

Item	Qty	Supplier Part No	Description
1	4		600 A, Fuse, 700V C
2	2		SW-Micro, 250 V, 10A Rated, U/ W000
3	10		Fuse .6A, 500 V c, 10 KIC
4	10		Fuse 2A, 500 V c, 10 KIC
5	10		Fuse 3.5 A, 500 V c, 10 KIC
6	10		Fuse 6A, 500 V c, 10 KIC
7	10		Fuse 10A, 500 V c, 10 KIC
8	10		Fuse 15A, 600 V c, 200 KIC
9	6		Fuse 60A, 1000 V c, KIC
10	3		SCR-2000V, 2293A, 4" Pkg
11	2		RLY-24 VDC, 2A2B0C, A, Fixed
12	2		RLY–120 V, 0A0B3C, 10A, BRKT
13	2		RLY-24 VDC, 0A0B3C, 10A, BRKT
14	4		SW-MICRO, DPDT, 15A, 125 VAC
15	5		LED lamps
16	5		BULB-6.3V, 0.15A, Miniature
17	5		LAMP BULB 18 V
18	2		LAMP-130 VAC/DC, U/W GE C-2000
19	2		LAMP BULB 130 V, 10 W, Clear
20	2		MOV, 750 VRMS, 2600 J, 70 KA, 1880V

Note : Item 1 SCR fuses rating to be as per the system design

4.2.2 SPARES FOR SCR SYSTEM IN PCR (Note : Supplier to insert their Part No. #)

Qty	Supplier Part No	Description
1		Module-AC, For generator panel
1		Module-DC, for SCR panel
2		Diode for passive field supply
2		Thyristor for active field supply
1		Exciter field supply transformer
1 sets		Control transformers (1 each) all type
2		DC Contactors for SCR
1 sets		Relays (1 each type)
2		Switch 3 position for Generator control
1 sets		Indicating meters DB40 (1 each type)
1		Phase rotation relay for generator panel
2		Syncronising Switch
4		600 A, Fuse, 700V
3		SW-Micro, 250 V, 10A Rated, U/ W000
20		Fuse .6A, 500 V c, 10 KIC
20		Fuse 2A, 500 V c, 10 KIC
20		Fuse 3.5 A, 500 V c, 10 KIC
20		Fuse 6A, 500 V c, 10 KIC
20		Fuse 10A, 500 V c, 10 KIC
20		Fuse 15A, 600 V c, 200 KIC
10		Fuse 60A, 1000 V c, KIC
4		SCR-2000V, 2293A, 4” Pkg
2		RLY-120VAC, 4A0B0C, 10A, IEC D
2		RLY-120VAC, 0A0B4C, 1A, Bifur
2		RLY-24VDC, 2A2B0C, 10A, IEC
4		SW-MICRO, DPDT, 15A, 125 VAC
1		BLWR-G/3B, 600V, 3PH, 2. HP, 50 HZ
10		LED lamps
10		BULB-6.3V, 0.15A, Miniature
5		LAMP BULB 18 V
5		LAMP-130VAC/DC, U/W GE C-2000
5		LAMP BULB 130 V, 10 W, Clear
1		MOV, 750 VRMS, 2600 J, 70 KA, 1880V
1		PCA PWR LIM CTRL
1		PC-DC SLIDE FOR SCR panel
1		ASSY-GND Leakage Detector
2		PC Auctioneering CKT BD
2		PC Generator Exciter BD
2		PC Voltage feedback

2		PC solid state relay ckt board
2		PC Field supply regulator for MP1-2
3		CABLE-ASSY, Profibus, 120 mtr.
1		1000 Amps, 600 Volts, 3-Pole, manually operated MCCBs used in transformer feeder panel
2		CB-1600AF/AT 690VAC, 65KIC, one for Gen & one for SCR panels.
1		CB-1000-1200AF/AT 690VAC, 65KIC
1		CB-UVR (YU), 24VDC
1		CB-Shunt Closing Release
1		CB-Charging Motor, 120VDC
2 set		PLC Power supply (1 each type)
2		PLC Processor card
2		PLC interface card
2 sets		PLC I/O Cards
1 set		10% spare plug and receptacles
4		Spare RTD temp scanner for PT-100

4.2.3 SPARES FOR DRILLER CONSOLE

Item	**DESCRIPTION**	Supplier Pt No	**QTY.**
1	Hand Throttle, Potentiometers, RTI limit Pot		1 set
2	SW- Assignment 3 position with contact blocks		2
3	SW – MP on/off 2 position with contact blocks		2
4	SW DW For/Rev 3 position with contact blocks		1
5	PCB – auctioneering circuit board		1
6	Relays (1 each type)		1 set
7	Pushbuttons		1 each
8.	Indication lamps		1 set
9.	Ammeters		1
10.	PLC power supply		2
11	PLC Interface /Communications Module		2
12	PLC cable		120 m

4.2.4 SPARES FOR MUD PUMP CONSOLE

Item	**DESCRIPTION**	Supplier Pt No	**QTY.**
1	Hand Throttle, Potentiometers		1 set
2	SW – MP on/off 2 position with contact blocks		1
3	PCB – auctioneering circuit board		1
4.	Indication lamps		1 set

5.	Ammeters		1
6.	PLC power supply		1
7	PLC Interface /Communications Module		1
8	PLC cable		30 m

Note : The above is the minimum list of spares which is to be provided by the supplier. The above list is only for reference and the supplier shall furnish a detailed list of Commissioning & 2 years OEM spares along with the offer. Manufacturer's part no. and component manufacturer's part no. to be furnished by supplier after detailed engineering

4.3 SPARE PLUGS & RECEPTACLES

10% plugs & sockets of each type are to be supplied loose as spares with minimum 1 No of each type of plug & receptacle used in the design. Supplier will furnish list of plugs & sockets used and spare qty. to be supplied after placement of Purchase Order.

5.0 GENERAL POINTS:

i) Though a broad outline on the requirement has been made, yet the scope should include anything not mentioned but required for completeness of the system to meet the requirement of oil well deep drilling rig (drilling capacity 6100 meters depth) and make the same suitable for dismantling, transportation and installation very often in rough and tough conditions.

ii) The system offered should have proven performance record. All relevant safety systems are to be incorporated and safety codes, relevant international codes to be strictly followed. Systems to be designed & manufactured to the latest NEC, IEC, IEEE-45, API 500, and NEMA standards, & should meet all present accepted international standards for the product/application

iii) Supplier shall use components/ sub-assemblies only of reputed and proven make and of latest design.

iv) The system shall be free from any defect arising from faulty material, workmanship or design. Any such defects, including replacement of faulty components, shall be carried out by the manufacturer free of cost during warranty period. **The SUPPLIER shall have the total and final responsibility for the design and performance of all equipment.**

v) All components, modules, subsystems shall be of current generation with latest technology which must be in production and must not face obsolescence in near future. The supplier and the manufacturer in turn shall guarantee that spare parts shall be available for at least fifteen years. A certificate to this effect shall be attached with the bid.

vi) The controls i.e. all electronics including modules and different electronic components, PLC etc. shall have high levels of noise immunity. They shall have high level of EMC and shall be immune from noise generated by future AC Variable Frequency Drive for Top Drive inclusion that will be powered from the 600 VAC Top Drive Feeder in the PCR.

vii) The system including all sub-assemblies and components should be designed to facilitate backward integration of future modules, cards etc without any modification.

viii) Bidder shall have well equipped testing and repair set-up in India, suitable for complete testing and repair of PCRs, including repairs to the skid and housing. Facilities available shall include Welding and painting. The set-up should include both on-site repair, as well as factory repair capability.

ix) The DC-PCR shall be brand new, unused, manufactured especially for Oil India, and free from any manufacturing defect. This shall be categorically stated by the bidders in their quotations.

x) Offers shall be complete in all respects and all the items/equipment as specified in the tender must be included in the package. Offers deemed to be incomplete shall be rejected (Bidders may quote additional items / equipment or accessories, other than Handling Equipment, not covered in this enquiry, if felt necessary for the completeness and efficient operation of the DC-PCR).

xi) The bidder shall fill up the bidder's response sheet with comments at the time of submission of bid.

6.0 PRE ENGINEERING INFORMATION:

After placement of order, supplier can ask for pre-engineering information, if required, to start the system engineering. Oil India shall provide all necessary data required.

7.0 COMMISSIONING

a. GENERAL

Commissioning is an essential part of this Tender, and bids that do not quote for commissioning shall be treated as incomplete bids.

Bidder has to successfully commission the DC-PCR at location in Assam, India, to the complete satisfaction of Oil India. Commissioning charges to be quoted separately on lumpsum basis which shall be considered for evaluation of the offers. These charges should include amongst others to and fro fares, boarding/lodging, local transport at Duliajan and other expenses of supplier's commissioning personnel during their stay at Duliajan, Assam(India). All income, GST, Corporate Taxes etc. towards the services provided under installation / commissioning /training shall be borne by the supplier and will be deducted at source at the time of releasing the payment. Bidder should also confirm about providing all these services in the Technical Bid.

Commissioning of the DC-PCR may require more than one visit, depending on availability of drilling rig and other factors. Charges for commissioning shall be paid as one lump-sum, and not per visit. The time available to commission the PCR shall be two weeks. However, Bidder should note that the PCR cannot be commissioned at one single visit. Bidder should plan for a minimum of two visits to complete the commissioning of the PCR. Successful bidder shall submit a tentative plan for commissioning the DC-PCR, for approval of Oil India.

The completed DC-PCR shall be connected to existing equipment (AC-PCR, Electrical motors, devices, cables etc.) in a drilling rig, checked for integrity of connections and acceptable levels of electrical insulation resistance, and powered up (phased up). All devices and interlocks shall be individually tested, and should work exactly as intended.

The entire drilling rig, with the DC-PCR fully integrated shall be tested, and should work exactly as intended. Any problems, design inadequacies, material failure, device malfunction etc. shall be addressed / replaced by the successful bidder. Adequate spares for commissioning activity should be arranged for by the successful bidder.

All personnel, statutory permissions (if required), equipment, tools, tackles and instruments required to commission the DC-PCR at site shall be arranged by the successful bidder. Oil India shall provide 415 VAC, 3 phase power, and transportation to and from Duliajan to drill-site only.

b. RECEIPT OF MATERIALS DESPATCHED FROM MANUFACTURER'S WORKS

The supplier should physically verify upon receipt, all equipment and materials (including commissioning spares etc.) after delivery at OIL's premises.

The supplier should carry out inspection of all the supplied items to ascertain and certify that there all dispatched items have reached site, there is no transit damage and items are complete in all respects and ready for installation. In case of any discrepancy, supplier shall take necessary action for immediate replacement/ replenishment of the same before installation.

c. A GUIDE FOR INSTALLATION AND COMMISSIONING ACTIVITIES EXPECTED:

i. Installation, wiring and laying out of equipment:
On arrival of equipment and materials (commissioning spares etc.) at OIL's premises the supplier should carry out inspection of the supplied items to ascertain and certify that there is no transit damage and items are complete in all respect and ready for installation. In case of any discrepancy, supplier shall take necessary action for immediate replacement/ replenishment of the same before installation.
After receipt, the equipment shall be installed at site. This will include wiring/ cabling, fitting of plugs and sockets and any other activity required to make the equipment ready for commissioning.
Any third party devices (if applicable) shall be installed inside the PCR at this stage.

ii. Initial commissioning after start up connection:
This activity will cover electrical insulation checks, wiring checks, phasing up (powering up) of individual equipment and the system as a whole. After start up connection and powering up, the complete system shall be tested at no load and minimum/ low load at OIL's well site. All equipment as well as the whole system shall work exactly as intended. Any modification/ re-wiring/ repair shall be carried out at this stage.

iii. Final commissioning:
The PCR shall be integrated with the other equipment of the Drilling Rig, and operated in conjunction with these pieces of equipment, as a complete system. Any problems, abnormalities, anomalies and defects noticed/ logged during this stage (operation at full/rated load) shall be rectified by the supplier. This will cover setting/ adjustment/ calibration of limits in the control system, drives etc. All equipment as well as the whole system shall work exactly as intended.

d. PRECAUTIONS TO BE OBSERVED:
Oil India's drilling sites have an elaborate system of hazardous areas / zones, where restrictions on electrical equipment operation are enforced. All personnel coming for any activity inside the drilling site is advised to familiarize themselves with such demarcations before commencing any work.

8.0 LIST OF ANNEXURE (S)

a. Annexure – 1: 20 pin receptacle pin connections for Alternators.
b. Annexure – 2: 20 pin receptacle pin connections for DC Motors.
c. Annexure – 3: Layout showing Placement of DC-PCR (Information to bidder)

9.0 OTHER ISSUES

a. EARTHING OF THE PCR SHELL
Six studs/bolts of M8 size shall be provided on each side of the DC-PCR for grounding.

b. STAGE & PRE-DESPATCH INSPECTION

Oil India's Engineers shall inspect the DC-PCR Shell at various stages of manufacture to ensure job quality and adherence to specifications. A final Pre-despatch inspection shall be conducted by OIL or its representative at manufacturer's works. The DC-PCR shall be dispatched from works only after receipt of such instruction from Oil India.

Supplier shall give call for such Pre-despatch inspection(s) at least 45 days in advance, to enable Oil India to prepare for inspection.

Bidders are also advised to include pre-despatch inspection costs (if any) in the bid . All to & fro travel expenses, boarding , lodging expenses of OIL representative shall be borne by OIL.

c. DETAILED ENGINEERING STAGE

This is the period between award of Purchase order, and the start of manufacture is referred to as the "Detailed Engineering Stage". Successful bidder shall provide OIL with all required drawings, and get them approved before manufacture. All engineering details not covered in these specifications, or specifications requiring modifications, shall be worked out mutually during this "pre-manufacturing" stage.

d. TESTING AT MANUFACTURER'S WORKS

Successful Bidder shall have to test the PCR at Manufacturer's works, and provide the following certificates to Oil India before despatch:

- Factory Acceptance Test Certificate
- Manufacturer's Quality Assurance Plan and Certificate of adherence to this plan
- Welding NDT Report for all welds at important points of the DC-PCR body

Bidder to take note that the despatch clearance would not be given if the above certificates are not produced duly signed and authenticated.

e. DESPATCH OF DC-PCRs TO OIL INDIA DESIGNATED SITE AT ASSAM

After completion of manufacture and testing at Manufacturer's works, supplier shall have to arrange for despatch of the DC-PCR to site at Duliajan. The exact site will be communicated by Oil India at the time of despatch. The entire PCR shall be adequately packed and sealed to avoid ingress of dust and water during travel, as well as to afford mechanical protection to the PCR.

All arrangements in this regard will have to be borne by supplier.

Bidders shall confirm categorically that Installation & Commissioning of the Rig Package with all accessories would be carried out by their competent personnel at OIL's designated drill site, in Duliajan, ASSAM, INDIA. However, the basic facilities required for installation & commissioning such as to & fro transportation to site from Duliajan, Crane service, electric power (3 phase, 415 VAC), water supply, pressurized air etc. shall be provided by OIL. All other facilities are to be arranged by the supplier.

Bidders, quoting for any bought out / third party item(s) should undertake & comply with Guarantee / Warranty clause indicated elsewhere in this tender.

f. MARKINGS ON THE BODY OF THE DC-PCR

The following shall be done after external painting of the PCR is complete.
The Two ends of the PCR shall be labeled "Draw works End" and "Compressor End", as appropriate.
The sides will be painted with Oil India's logo (to be provided), and the Words "Oil India Limited", "A Government of India Undertaking", "DC-PCR", "Rig #S2 ", the Purchase

Order Number, Dimensions and weight of the DC-PCR, Manufacturer's Name and any Lifting Instructions.

g. SAFETY CONSIDERATIONS INSIDE THE PCR
Appropriate warning labels and safety provisions shall be made in the PCR to caution the operating and maintenance personnel against potential hazards and to prevent direct human contact to any live part or rotating part during operation.

10.0 WARRANTEE / GUARANTEE

Bidder should confirm in their bid that they will provide warranty / guarantee for a period of 1 year (12 months) from date of successful commissioning of the DC-PCR at site. This guarantee shall cover all items of the PCR package, including (but not limited to) the skid, housing, all the internal components and any spares supplied. Any repairs / replacements required during this Warrantee period shall be carried out by the successful bidder, on site, at no cost to Oil India. The typical response time shall be 48 hours (at site) after a repair call is given by Oil India.

Repairs / replacements shall normally be carried out at site by the supplier. However, in serious problems the DC-PCRs may need to be returned to factory for major repairs. If the DC-PCR needs to be returned to the factory for repairs due to manufacturing or design problems, all transportation and repair charges shall be to supplier's account.

11.0 DRAWINGS AND APPROVALS

a. GENERAL
All information, operating and warning labels and O&M Manuals should be in English only.

The bidder should provide at least one set of parts list, operations manual & maintenance manual covering all the items & its accessories including any special / alignment tools for the same along with the technical offer. Technical details of the electrical system with dimensional drawing (including Layout, arrangement and circuit diagrams) must also be forwarded along with the technical offer.

Successful Bidder shall provide engineering drawings and BOM for approval of Oil India before manufacturing. All engineering details not covered in these specifications shall be worked out before manufacture. Any corrections / additions / modifications to drawings and BOM requested by Oil India shall be carried out by successful bidder without any cost to Oil India. Manufacture shall start only after written approval from Oil India on all issues. See sub-section "d" below for details about drawing submission schedule.

b. PARTS CATALOGUE, OPERATION / INSTRUCTION MANUAL & DRAWING, TECHNICAL INFORMATION & BULLETIN:
After successful commissioning of the DC-PCR, the successful bidder shall provide Oil India with five sets of O&M manuals, BOM, and "as-built" drawings, of the DC-PCR. Five of these sets shall be in printed form, and two in electronic form (flash memory format).

Operation & Maintenance manual should cover the following:
- Layout drawing of all components on the unit with details of load distribution
- Literature of all third party devices installed on the DC-PCR
- Safety related Information

c. CONFIDENTIALITY
Any third party details required and obtained by the successful bidder through Oil India, to complete the DC-PCR design shall be kept confidential. All such material shall be returned to Oil India after completion of related job. Any materials or information about Oil India,

obtained by the successful bidder during execution of this job shall be kept confidential, returned to Oil India, or properly disposed of.

d. SCHEDULE OF SUBMISSION OF DRAWINGS/ DOCUMENTS

Successful Bidder shall submit the following Drawings/ documents at the stages indicated therein:

A. The following Drawings shall be submitted with the Bid:

i) Indicative single line power flow diagram of the DC-PCR, showing all voltage levels, current ratings & short circuit making/ breaking capacities of breakers/ isolators, bus ampere rating (taking into account all generators / SCRs fully loaded) etc.
ii) Details of the Short circuit calculation of the complete electrical system
iii) Indicative Layout diagram (Plan), showing all electrical panels of the PCR, Socket boards, etc.
iv) Indicative PCR dimensional drawings, including details of rain protection for cable & plug sockets etc.
v) Spare parts/ Spare equipment / Consumables list and quotations of spares

B. The following Drawings shall be submitted after successful commissioning of the PCR:

i) Equipment literature/ Third party (quality control) inspection report
ii) "As-built" drawings,
iii) Operation and workshop manuals,
iv) Bill of Materials (BOM) and any other relevant documents

12.0 MAKES OF IMPORTANT EQUIPMENT

i) The Following shall be preferred makes / Design for DC-PCR Equipment:

Sl #	Item Description	Design / Make
1	Generator Control	HG/ Ross Hill Design (AC- Module based)
2	Generator Exciter PCB	HG / Ross Hill Design
	SCR Control	HG / Ross Hill design (DC-Module based)
3	DC Motor Field Control	HG / Ross Hill design (Diode & Thyristor)
4	Synchronizing Relay	Basler Veri-Synch / Equivalent
5	Air Circuit Breakers	ABB / Siemens / Merlin-Gerin
6	DC Contactors	Hubbel / NOV / Siemens /Cutler Hammer
7	Armature Reversing Contactor	Hubbel / NOV / Cutler Hammer
8	External Connection Plug-Sockets (Single pole / 5 Pin / 20 Pin)	Pyle National / BCH / Appleton / Crouse-Hinds
9	PLC	Siemens S7 / Rockwell
10	Touch Screen	Siemens / Wonderware
11	Air Conditioner	Trane / Hitachi / Carrier / Daikin
12	Generator RTD Temperature Scanner	Omega / Libratherm (10 Ohm Cu / 100 Ohm Pt)

ii) Existing Equipment at Drilling Rigs of Oil India (Provided as Information to Bidder)

Sl #	Item Description	Make / Model
1	Generator	KATO / BHEL 1215/1430 kVA, 600 VAC, 1000 RPM, 50 Hz
2	DC Motor	BHEL 750 VDC, 1000 HP, separately excited, shunt wound, with 55-60ADC field winding current,
3	Power Transformers	2 x 600 kVA, 600/415 VAC, 3 Phase, 50 Hz. Neutral on secondary (415 VAC side) grounded through NGR, hence neutral will not be available.
4	Isolation Transformers	2 x 30 kVA/1 X100 kVA, 415 VAC/415 VAC, Mainly for Rig accommodation bunk-houses' facilities; and areas lighting.

ANNEXURE - 1

20 pin plug and socket connection details of Alternators.

Pin No	Function	Connectivity	Remarks
1	RTD-1		PHASE A
2	RTD-2		PHASE A
3	RTD-3		PHASE B
4	RTD-4		PHASE B
5	EXCITER FIELD +VE	EXCITER FIELD ON DG SET	
6	EXCITER FIELD -- VE	--DO--	
7	SPACE HEATER PHASE	SPACE HEATER 230VAC 500W ON DG SET	GENERATOR SPACE HEATER
8	SPACE HEATER NEUTRAL	--DO--	
9	RTD-5		PHASE C
10	RTD-6		PHASE C
11	RTD-6 COM		PHASE C
12	RTD-5 COM		PHASE C
13	ENGINE SHUTDOWN	ENGINE OVERSPEED (NO) SWITCH	In case of engine overspeed switch activates the engine should get shut down after CB trip.
14	CIRCUIT BREAKER TRIP	ENGINE LLOP (NC), HAT(NO), HWT(NO) & HOT(NO) SENSORS	In case of LLOP or HAT or HWT or HOT Sensors activates the Gen panel CB should trip.
15	COMMON	COMMON SUPPLY FOR 13 & 14	ENGINE & BREAKER TRIP COMMON
16	RTD-4 COM		PHASE B
17	RTD-3 COM		PHASE B
18	RTD-2 COM		PHASE A
19	RTD-1 COM		PHASE A
20	RTD METER COM		

Note :

1.0 Presently following receptacles & plugs of Pyle National Star line (Amphenol) are being used in **OIL** for 20 core control cables :

i) 20 pin plug with male inserts : Catalog No ZPEKLJ-2020-332PN

ii) 20 pin receptacle with female inserts : Catalog No ZREP-20-332SN

It is recommended that same type of the plugs & receptacles may be provided on the plug panel boards of the PCR.

2.0 Plug should be suitable for connection with 2.5sqmm x 20 core elastomeric screened cable for DC motor connection.

3.0 Plug gland to be suitable for cable outside diameter of 29 – 31 mm.

ANNEXURE - 2

20 pin plug and socket connection details of DC motors.

Pin No	Function	Connectivity	Remarks
1	SPARE		SPARE
2	BLOWER AIR-FLOW SWITCH,N/C		AIR LOSS SWITCH
9	BLOWER AIR-FLOW SWITCH,COM		
3	MOTOR CUT OUT SWITCH,N/C		MOTOR CUT OUT SWICH
4	MOTOR CUTOUT SWITCH,COM		
5	+ VE FIELD	+VE FIELD OF DC MOTOR	FOR + SIDE OF FIELD
6	+ VE FIELD	+VE FIELD OF DC MOTOR	
7	+ VE FIELD	+VE FIELD OF DC MOTOR	
8	+ VE FIELD	+VE FIELD OF DC MOTOR	
17	+ VE FIELD	+VE FIELD OF DC MOTOR	
18	+ VE FIELD	+VE FIELD OF DC MOTOR	
10	- VE FIELD	-VE FIELD OF DC MOTOR	FOR -- SIDE OF FIELD.
11	- VE FIELD	-VE FIELD OF DC MOTOR	
12	- VE FIELD	-VE FIELD OF DC MOTOR	
13	- VE FIELD	-VE FIELD OF DC MOTOR	
19	- VE FIELD	-VE FIELD OF DC MOTOR	
20	- VE FIELD	-VE FIELD OF DC MOTOR	
14	SPACE HEATER PHASE	SPACE HEATER 230VAC 500W	SPACE HEATER ON DC MOTOR
15	SPACE HEATER NEUTRAL	SPACE HEATER 230VAC 500W	
16	GROUND		GROUND

Note :

2.0 Presently following receptacles & plugs of Pyle National Star line (Amphenol) are being used in **OIL** for 20 core control cables :

iii) 20 pin plug with male inserts : Catalog No ZPEKLJ-2020-332PN

iv) 20 pin receptacle with female inserts : Catalog No ZREP-20-332SN

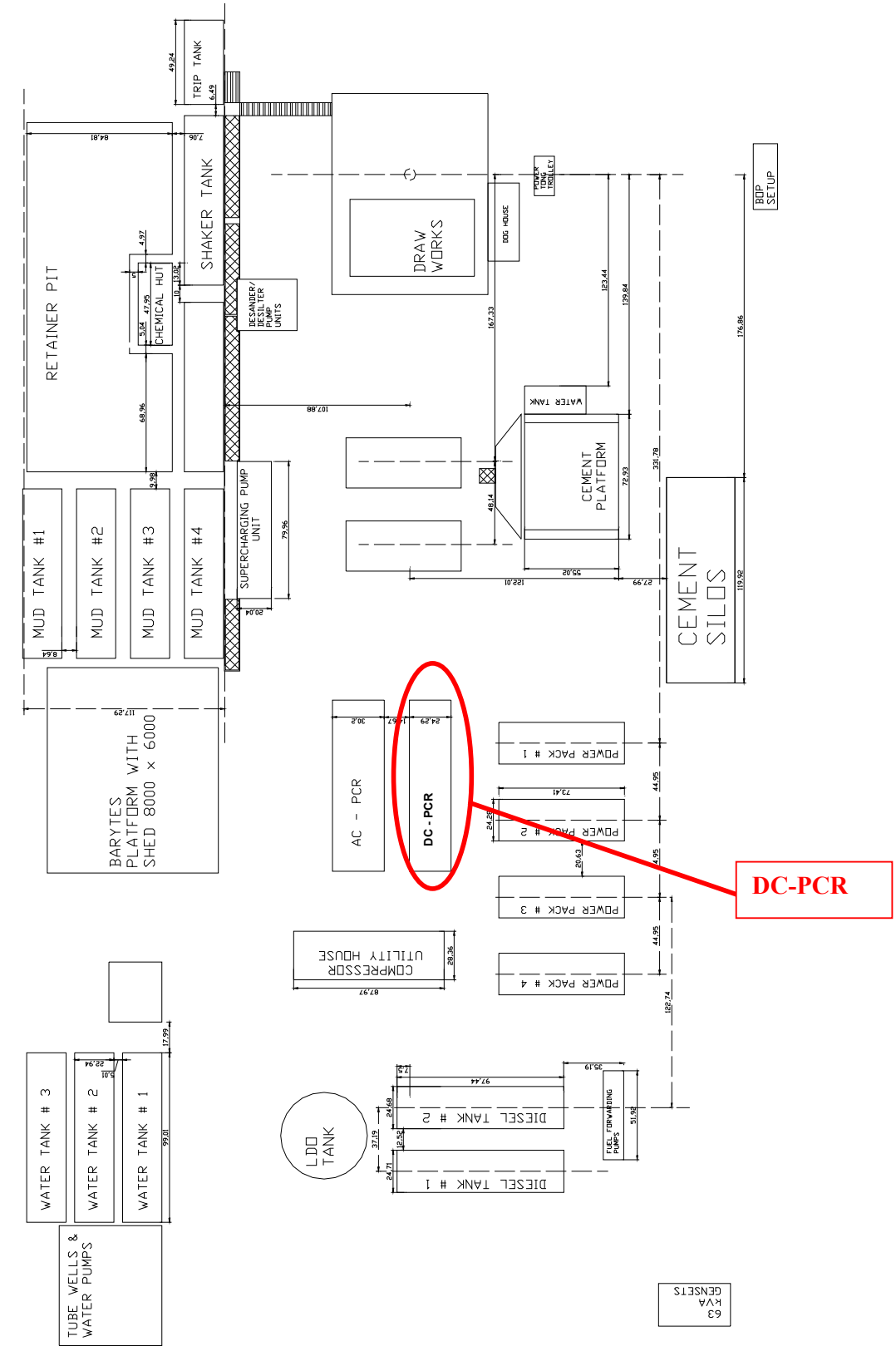
It is recommended that same type of the plugs & receptacles may be provided on the plug panel boards of the PCR.

2.0 Plug should be suitable for connection with 2.5sqmm x 20 core elastomeric screened cable for DC motor connection.

3.0 Plug gland to be suitable for cable outside diameter of 29 – 31 mm.

ANNEXURE – 3

Rig Layout showing placement of DC-PCR



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BB:: GENERAL NOTES TO BIDDERS:

Sl No	Clause description
1.0	**Tender Fee – Tender fee must be paid online through OIL's payment gateway only and no other instrument (Cash/DD/Cheques/Cashier Cheque, etc) will be acceptable.**
2.0	**Bid Security/EMD/Performance Bank Guarantee – Must be paid either through online mode or Submission of Bank Guarantee/LC only. No DD/Cheques/Cashier Cheque or any other mode will be acceptable.**
3.0	The tender will be governed by "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders) including Amendments & Addendum to "General Terms & Conditions" for e-Procurement.
4.0	Bid must be submitted online through OIL's e-procurement portal. Bid submitted in any other form will be rejected.
5.0	Please note that all tender forms and supporting documents are to be submitted through OIL's e-Procurement site only except following documents which are to be submitted manually in sealed envelope super scribing tender no. and due date to The GM Materials, Materials Department, Oil India Limited, Duliajan- 786602, Assam on or before 13:00 hrs (IST) on the Bid Closing Date mentioned in the Tender. **a) Original Bid Security along with two duplicate copies of Bid Security.** **b) Any other documents which have been particularly asked for in this tender for submission.**
6.0	Bidders must ensure that their bid is uploaded in the system before the tender closing date and time. Also, they must ensure that above documents which are to be submitted in a sealed envelope are also submitted at the above mentioned address before the bid closing date and time, failing which the offer shall be rejected.
7.0	The tender is invited under **SINGLE STAGE-TWO BID SYSTEM**. The bidder has to submit both the **"TECHNO-COMMERCIAL UNPRICED BID"** and **"PRICED BID"**through electronic form in the OIL's e-Tender portal within the Bid Closing Date and Time stipulated in the e-Tender. The "Techno-commercial Unpriced Bid" shall contain all technical and commercial details except the prices which shall be kept blank. Details of prices as per Bid format / Commercial bid to be uploaded as attachment in the Attachment Tab "Notes and Attachments". Any offer not complying with above submission procedure will be rejected as per Bid Rejection Criteria mentioned in the tender. Notes and Attachments → **Only Price Details Should Be Uploaded** Technical attachments → **All technical bid documents except price details** **Please do refer "NEW INSTRUCTION TO BIDDER FOR SUBMISSION" for the above two points and also please refer " New Vendor Manual (effective 12.04.2017) " available in the login Page of the OIL's E-tender Portal.**

	
8.0	In Technical Bid opening, only Technical Rfx will be opened. Therefore, the bidder should ensure that "TECHNO-COMMERCIAL UNPRICED BID should contain details as mentioned in the technical specifications as well as BEC/ BRC and upload the same in the Technical RFx Response-> User - > Technical Bid. **No price should be given in above Technical Rfx otherwise the offer will be rejected.** Please go through the help document in details before uploading the document and ensure uploading of technical bid in the Technical RFx Response-> User - > Technical Bid only. The "PRICE BID" must contain the price schedule and the bidder's commercial terms and conditions. Details of prices as per Bid format / Commercial bid can be uploaded as Attachment under the attachment option under "Notes & Attachments".
9.0	PRICED BIDS OF ONLY THOSE BIDDERS WILL BE OPENED WHOSE OFFERS ARE FOUND TO BE TECHNO-COMMERCIALLY ACCEPTABLE.
10.0	Bidders are requested to examine all instructions, forms, terms and specifications in the bid. Failure to furnish all information required as per the bid or submission of offers not substantially responsive to the bid in every respect will be at the bidders risk and may result in rejection of its offer without seeking any clarifications.
11.0	Please mention clearly in your quotation the Net. Weight, Gross Weight & Volume, Indian Agent's Name and its Commission, Payment Terms, Ocean Freight/Air Freight Charges, Port of Loading, Delivery period, Country of origin with manufacturer's name, etc.
12.0	To ascertain the substantial responsiveness of the bid, OIL reserves the right to ask the bidder for clarification in respect of clauses covered under BRC also and such clarifications fulfilling the BRC clauses in toto must be received on or before the deadline given by OIL, failing which the offer will be summarily rejected.
13.0	Other terms and conditions of the tender shall be as per "General Terms & Conditions" for e- Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders). However, if any of the Clauses of the Bid Rejection Criteria (BRC) / Bid Evaluation Criteria (BEC) mentioned here contradict the Clauses in the "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders) of the tender and/or elsewhere, those mentioned in this BEC / BRC shall prevail.
14.0	All the Bids must be Digitally Signed using "Class 3" [Organization] digital certificate (e-commerce application) only as per Indian IT Act obtained from the licensed Certifying Authorities operating under the Root Certifying Authority of India (RCAI), Controller of Certifying Authorities (CCA) of India. The bid signed using other than "Class 3" digital certificate, will be liable for rejection.

15.0	Please do refer the User Manual provided on the portal on the procedure How to create Response for submitting offer.
16.0	Bidders to note that Govt. of India under Micro, Small and Medium Enterprises Development (MSMED) Act 2006, has proclaimed the Public Procurement Policy, 2012 with effect from 1st April, 2012 in respect of procurement of goods and services, produced and provided by micro and small enterprises, by its Ministries, Departments and Public Sector Undertakings for promotion and development of Micro and Small Enterprises. A new Clause on applicability of Public Procurement Policy for procurement of goods from Micro and Small Enterprises (MSE) in the tender is furnished vide Amendment to General Terms and Conditions for Global Tender (MM/GLOBAL/E-01/2005). Bidders are requested to take note of the same and to submit their offers accordingly.
17.0	The items shall be brand new, unused & of prime quality. The manufacturer shall warrant (in the event of an order) that the product supplied will be free from all defects & fault in material, workmanship & manufacture and shall be in full conformity with ordered specifications. This clause shall be valid for a period of 1 year (12 months) from date of successful commissioning of the DC-PCR at site. The defective materials, if any, rejected by OIL shall be replaced by the supplier at their own expense. Bidders must confirm the same in their quotations.
18.0	Any deviation(s) from the tender specification should be clearly highlighted specifying justification in support of deviation.
19.0	The Integrity Pact is applicable against this tender .OIL shall be entering into an Integrity Pact with the bidders as per format enclosed vide Annexure- VI of the tender document. This Integrity Pact proforma has been duly signed digitally by OIL's competent signatory. The proforma has to be returned by the bidder (along with the technical bid) duly signed (digitally) by the same signatory who signed the bid, i.e., who is duly authorized to sign the bid. Uploading the Integrity Pact with digital signature will be construed that all pages of the Integrity Pact has been signed by the bidder's authorized signatory who sign the Bid. If any bidder refuses to sign Integrity Pact or declines to submit Integrity Pact with the offer, their bid shall be rejected straightway. OIL's Independent External Monitors at present are as under: SHRI RAJIV MATHUR, IPS (Retd.), Former Director (IB) Govt. of India e-Mail ID : rajivmathur23@gmail.com SHRI SATYANANDA MISHRA, IAS(Retd.) Former Chief Information Commissioner & Ex-Secretary, DOPT, Govt. of India E-mail Id : satyanandamishra@hotmail.com SHRI JAGMOHAN GARG, Ex-Vigilance Commissioner, CVC e-Mail id : jagmohan.garg@gmail.com
20.0	**Original Bid Closing Date shall be considered by OIL for evaluation of BRC Criteria in case of any extension of the original bid closing date.**
21.0	Performance Security clause (Clause No. 10.0 of Section-A) of "General Terms & Conditions for Global Tenders (MM/GLOBAL/01/2005)" has been amended and the new clause is detailed in the Amendment dated 25.04.2016 issued to MM/GLOBAL/01/2005. **Successful bidder will be required to furnish a Performance Bank Guarantee @10% of the order value which should remain valid for the period execution, including extension, if any and the entire**

	warranty period in line with tender requirement. The successful bidder shall submit Performance Security within 30 days of award, failing which OIL reserves the right to cancel the order and forfeit their Bid Security. Bidders should undertake in their bids to submit Performance Security as stated above. Bidders to note the same and to confirm its acceptance in their offers. The Bank Guarantee issued by bank must be routed through SFMS platform as per following details: a. (i) "MT760/ MT760 COV for issuance of bank guarantee (ii) MT767/ MT767 COV for amendment of bank guarantee The above message/intimation shall be sent through SFMS by the BG issuing bank branch to Axis Bank, Duliajan Branch, IFS Code: UTIB0001129. Branch Address: Axis Bank Ltd., Duliajan Branch, Daily Bazar, Jyotinagar, Duliajan, Dist-Dibrugarh, Pin- 786602. b. The vendor shall submit to OIL the copy of the SFMS message as sent by the issuing bank branch along with the original bank guarantee.
22.0	Bidder to sign and submit completely filled up Bidder's Response Sheet & Commercial check list.
23.0	**Payment terms: Payment shall be released as follows-** **(i) 80% value shall be released on supply against proof of dispatch/shipment of the PCR** **(ii) Remaining 20% along with the installation & commissioning charges shall be paid after successful commissioning and acceptance by OIL at site.**
24.0	**Liquidated Damages: Refer to "General Terms & Conditions" for e- Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders). In case of deduction of LD, LD amount will be deducted along with applicable rate of GST.**
25.0	**The items covered by this enquiry shall be used by Oil India Limited in the PEL/ML areas which are issued/renewed after 01/04/99 and hence Nil Customs Duty & concessional IGST during import will be applicable. Indigenous bidder shall be eligible for concessional rate of GST against Essentiality Certificate for invoice valuing INR 10 lakh and above.** **In the event of an order on indigenous bidder, OIL will issue Project Authority Certificate (PAC) under Deemed Export, where import content is declared by the bidder for availing Custom Duty benefit on the import content.** **Supplier shall arrange to provide all necessary documents to apply for the essentiality certificate on receipt of request from OIL, if any. Further, supplier shall affect dispatch only on receipt of relevant certificates from OIL, failing which all related liabilities shall be to Supplier's account.**
26.0	Bidders to note that Ministry of Petroleum & Natural Gas, Government of India implemented PPLC Policy to provide Purchase Preference (linked with local content) by notification no. Ref. O-27011/44/2016-ONG-II/FP dtd.25.04.2017. A new Clause on applicability of Purchase Preference (linked with local content) policy in the tender is furnished as Annexure-V of the tender document. Bidders are requested to take note of the same and to submit their offers accordingly wherever applicable.
27.0	**Clauses related to GST** 1. For the purposes of levy and imposition of GST, the expressions shall have the following meanings:

(a) GST - means any tax imposed on the supply of goods and/or services under GST Law.

(b) Cess – means any applicable cess, existing or future on the supply of Goods and Services as per Goods and Services Tax (Compensation to States) Act, 2017.

(c) GST Law - means IGST Act 2017, CGST Act 2017, UTGST Act, 2017 and SGST Act, 2017and all related ancillary Rules and Notifications issued in this regard from time to time.

2. The rates quoted by the bidders shall be inclusive of all taxes, duties and levies. However, bidders are required to provide separately the rate and amount of all types of taxes, duties and levies. In case, the quoted information related to various taxes, duties & levies subsequently proves wrong, incorrect or misleading, OIL will have no liability to reimburse the difference in the duty/ tax, if the finally assessed amount is on the higher side and OIL will have to right to recover the difference in case the rate of duty/ taxes finally assessed is on the lower side. Further, bidders have to clearly show the amount of GST separately in the Tax Invoices. Further, it is the responsibility of the bidders to make all possible efforts to make their accounting / IT system GST compliant in order to ensure availability of Input Tax Credit (ITC) to Oil India Ltd.
3. Offers without giving any of the details of the taxes (Including rates and amounts) as specified above will be considered as inclusive of all taxes including GST. When a bidder mentions taxes as extra without specifying the rates & amount, the offer will be loaded with maximum value towards taxes received against the tender for comparison purposes. If the bidder emerges as lowest bidder after such loading, in the event of order on that bidder, taxes mentioned by OIL on the Purchase Order/ Contracts will be binding on the bidder.
4. Bidders are required to pass on the benefit arising out of introduction of GST, including seamless flow of Input Tax Credit, reduction in Tax Rate on inputs as well as final goods by way of reduction of price as contemplated in the provision relating to Anti-Profiteering Measure vide Section 171 of the CGST Act, 2017. Accordingly, for supplies made under GST, the bidders should confirm that benefit of lower costs has been passed on to OIL by way of lower prices/taxes and also provide details of the same as applicable. OIL reserves the right to examine such details about costs of inputs/input services of the bidders to ensure that the intended benefits of GST have been passed on to OIL.
5. Oil India Ltd. shall declare the value of free issue of materials and services, if any, involved in the execution of the contract. The Contractor should consider the same while working out the GST liability, if any. Further in cases where GST is leviable on any facilities provided by OIL and used by bidders and the consideration for which is recovered by OIL in the form of reduction in the invoice raised by bidders then OIL will raise GST invoices on such transactions and the same will be reimbursed by bidders.
6. **When Input tax credit is available for Set Off**
   Evaluation of L-1 prices shall be done based on Quoted price after deduction of Input Tax Credit (ITC) of GST, if available to OIL.OIL shall evaluate the offers on the basis of the quoted rates only and any claim subsequently by the bidders for additional payment/liability shall not be admitted and has to be borne by the bidders
   When Input tax credit is NOT available for Set Off
   Evaluation of L-1 prices shall be done based on Quoted price only. OIL shall evaluate the offers on the basis of the quoted rates only and any claim subsequently by the bidders for additional payment/liability shall not be admitted and has to be borne by the bidders
7. Bidders agree to do all things not limited to providing GST compliant Tax Invoices or other documentation as per GST law relating to the supply of goods and/or services covered in the instant contract like raising of and /or acceptance or rejection of credit notes / debit notes as the case may be,

	payment of taxes, timely filing of valid statutory Returns for the tax period on the Goods and Service Tax Network (GSTN), submission of general information as and when called for by OIL in the customized format shared by OIL in order to enable OIL to update its database etc. that may be necessary to match the invoices on GSTN common portal and enable OIL to claim input tax credit in relation to any GST payable under this Contract or in respect of any supply under this Contract. 8. In case Input Tax Credit of GST is denied or demand is recovered from OIL by the Central / State Authorities on account of any non-compliance by bidders, including non-payment of GST charged and recovered, the Vendor/Supplier/Contractor shall indemnify OIL in respect of all claims of tax, penalty and/or interest, loss, damages, costs, expenses and liability that may arise due to such non-compliance. OIL, at its discretion, may also withhold/recover such disputed amount from the pending payments of the bidders.

BID REJECTION CRITERIA (BRC) / BID EVALUATION CRITERIA (BEC)

(I) BID REJECTION CRITERIA (BRC) :

The bids must conform to the specifications and terms and conditions given in the enquiry. Bids shall be rejected in case the item(s) offered do not conform to the minimum/maximum parameters stipulated in the technical specifications and to the respective international / national standards wherever stipulated. Notwithstanding the general conformity of the bids to the stipulated specifications and terms and conditions, the following requirements shall have to be particularly met by the bidders, without which the offer will be considered as non-responsive and rejected.

(A) TECHNICAL:

1.0 Bidder shall be a manufacturer of PCRs (AC-PCR / DC-PCR / VFD PCR etc.) used in Drilling Rigs of minimum capacity 1400HP and above, and supplied during last 05 (Five) years to be reckoned from the date of Bid Closing Date to PSU / Central Govt. / State Govt./Public Limited Companies operating in India. Necessary evidence in the form of Purchase Orders/Invoices/Bill of Lading/acceptance / performance certificates shall be submitted along with the offer. Bids from parties other than manufacturers shall not be entertained.

2.0 Bidder shall have adequate manufacturing facility for manufacturing and assembly of PCRs (AC-PCR / DC-PCR / VFD PCR) of his own. The bidder shall supply proof of this facility in his bid. This is however exempt for bidders that have previously supplied PCRs (AC-PCR / DC-PCR / VFD PCR) to Oil India. Such exempted bidders shall provide a list of Purchase Orders from Oil India Limited, executed successfully.
Acceptable proof in this regard shall be Quality certifications for the facility issued by independent agencies/ Invoices for PCRs shipped from this facility ,Valid Certificate of Incorporation of the manufacturing facility / Valid Uddyog Aadhar number certificate/ Government approval for this facility.

3.0 Bidder should have manufactured and supplied at least 1 PCR during last 05 (Five) years to be reckoned from the date of Bid Closing Date in the manufacturing facility stated in 2.0 above, and these PCRs should have been supplied for 50 Hz systems (as in use in Oil India's Drilling Rigs) as on Bid Closing Date.

Copies of Purchase Orders and any of the following documents should be enclosed with the bid, as proof of supply of PCR: Performance Certificates/Invoice/Bill of Lading.

This is however exempt for bidders that have previously supplied PCRs (AC-PCRs, DC-PCRs or VFD PCR's used in Drilling Rigs) to Oil India Limited. Such exempted bidders shall provide a list of Purchase Orders from Oil India Limited, executed successfully.

4.0 Delivery required against this tender is maximum 14 (Fourteen) months from the date of opening of LC in case order is placed on the foreign supplier OR within 14 (Fourteen) months from the date of receipt of order in case order is placed on indigenous supplier. Date of clean Bill of Lading (B/L in case of foreign supplier) or Consignment Note date (C/Note date in case of indigenous

supplier) shall be considered as delivery date. Bidder must comply the above schedule and confirm in their Techno-Commercial bid. Bids not meeting time schedule as mentioned above shall be summarily rejected.

(B). <u>FINANCIAL</u>:

1.0 The bidder shall have an annual financial turnover of minimum US$ 6,72,224.00 or INR 442.00 Lakhs during any of the preceding 03 (Three) financial/accounting years reckoned from the original bid closing date, irrespective of whether their bid is for all the tendered items or not.

2.0 "Net Worth" of the bidder should be positive for the financial/accounting year just preceding to the original Bid Closing Date of the Tender (i.e., year 2017-18).

3.0 Considering the time required for preparation of Financial Statements, if the last date of preceding financial/accounting year falls within the preceding six months reckoned from the original bid closing date and the Financial Statements of the preceding financial/accounting year are not available with the bidder, then the financial turnover of the previous three financial/accounting years excluding the preceding financial/accounting year will be considered. In such cases, the Net worth of the previous financial/accounting year excluding the preceding financial/accounting year will be considered. However, the bidder has to submit an affidavit/undertaking certifying that 'the balance sheet/Financial Statements for the financial year 2017-18 has actually not been audited so far'.

Note:

a) For proof of Annual Turnover & Net worth any one of the following document must be submitted along with the technical bid:-

i) A certificate issued by a practicing Chartered / Cost Accountant (with Membership Number and Firm Registration Number), certifying the Annual turnover & Net worth as per format prescribed in ANNEXURE-IV.

OR

ii) Audited Balance Sheet alongwith Profit & Loss account. In case of foreign bidders, self-attested/digitally signed printed published accounts are also acceptable.

b) In case the bidder is a Central Govt. Organization/PSU/State Govt. Organization/Semi-State Govt. Organization or any other Central/State Govt. Undertaking, where the auditor is appointed only after the approval of Comptroller and Auditor General of India and the Central Government, their certificates may be accepted even though FRN is not available. However, bidder to provide documentary evidence for the same.

4.0 In case the Audited Balance Sheet and Profit & Loss Account submitted along with the bid are in currencies other than INR or US$, the bidder shall have to convert the figures in equivalent INR or US$ considering the prevailing conversion rate on the date on which the Audited Balance Sheet and Profit & Loss Account is signed. A CA certificate is to be submitted by the bidder regarding converted figures in equivalent INR or US$.

(C). COMMERCIAL:

Commercial Bid Rejection Criteria will be as per Section D of General Terms & Conditions of Global Tender (MM/GLOBAL/E-01/2005) with following Special Bid Rejection Criteria.

1.0 Bids are invited under **Single Stage Two Bid System**. Bidders shall quote accordingly under Single Stage Two Bid System. **Please note that no price details should be furnished in the Technical (i.e. Unpriced) bid**. The "Unpriced Bid" shall contain all techno-commercial details except the prices, which shall be kept blank. The "Price Bid" must contain the price schedule and the bidder's commercial terms and conditions. Bidder not complying with above submission procedure will be rejected.

2.0 **Bid security of INR 15,77,000.00 or US$ 24,000.00;** shall be furnished as a part of the TECHNICAL BID. **Any bid not accompanied by a proper bid security in ORIGINAL will be rejected without any further consideration.** A bid shall be rejected straightway if Original Bid Security is not received within the stipulated date & time mentioned in the Tender and/or if the Bid Security validity is shorter than the validity indicated in Tender and/or if the Bid Security amount is lesser than the amount indicated in the Tender.

2.1 For exemption for submission of Bid Security please refer Clause No. 9.8 (Section A) of "General Terms & Conditions" for e-Procurement as per Booklet No. MM/GLOBAL/E-01/2005 for E-procurement (ICB Tenders).

2.2 Bank Guarantee towards Bid Security shall remain valid up to **16.12.2018**.

3.0 Validity of the bid shall be minimum 120 days from the date of Bid Closing Date. Bids with lesser validity will be straightway rejected.

4.0 Bidders must confirm that Goods, materials or plant(s) to be supplied shall be new of recent make and of the best quality and workmanship and shall be guaranteed for a period of 01 (one) year from the date of successful completion of installation and commissioning of the entire equipment at site against any defects arising from faulty materials, workmanship or design. Defective goods/materials or parts rejected by OIL shall be replaced immediately by the supplier at the supplier's expenses at no extra cost to OIL.

5.0 Successful bidder will be required to furnish a Performance Bank Guarantee @10% of the order value. The Performance Bank Guarantee must be valid for a period of 01 (one) year from the date of successful completion of installation and commissioning of the entire equipment at site and also throughout the period execution, including extension, if any. Bidder must confirm the same in their Technical Bid. The successful bidder shall submit Performance Security within 30 days of award, failing which OIL reserves the right to cancel the order and forfeit their Bid Security. Offers not complying with this clause will be rejected.

6.0 Offers should be submitted with Integrity Pact duly signed by the authorized signatory of the bidder. If any bidder refuses to sign Integrity Pact or declined to submit Integrity Pact with the offer, their bid shall be rejected straightway.

7.0 Bidders are required to submit the summary of the prices in their price bids as per bid format (Summary), given below:

(i) Price Bid Format (SUMMARY) for Foreign Bidders:

(Prices to be quoted as per Tender Specification vide Annexure-I)

(A) Total Cost of DC PCR Unit:
(B) Total Cost of Spare Parts, Tools, Tackles etc.:
(C) Pre-Despatch/shipment Inspection Charges:
(D) Packaging, Covering, Documentation & FOB Charges for above supply:
(E) Total FOB Port of Shipment value, (A+B+C+D) above :
(F) Ocean Freight Charges upto Kolkata, India for above supply:
(G) Banking &Insurance Charges @1.5% of E :
(H) Total CIF Kolkata value (E+F+G) :
(I) Landing Charges @1% of H:
(J) Total CIF Landed Value, (H+I):
(K) Custom Duty on J:
(L) CIF Landed Value + Custom Duty, (J+K)
(M) GST (including cess, if any) on L:
(N) Compensatory Cess, if any on M:
(O) Total CIF + Custom Duty + GST Landed Value (L+M+N):
(P) Installation and Commissioning Charges:
(Q) GST on Installation and Commissioning Charges of P:
(R) Total Value (O+P+Q) :
(S) Total Value in words :
(T) Gross Weight, Volume, Port of Shipment, Country of Origin:

(ii) Price Bid Format (SUMMARY) for Indigenous Bidders:

(Prices to be quoted as per Tender Specification vide Annexure-I)

(A) Total Cost of DC PCR Unit:
(B) Total Cost of Spare Parts, Tools, Tackles etc.:
(C) Pre-Despatch/shipment Inspection Charges inclusive of GST:
(D) Packaging, Covering, Documentation & Forwarding Charges for above supply inclusive of GST:
(E) Total Ex-Works Value (A+B+C+D):
(F) GST on G :
(G) Total FOR Despatching Station Value, (E+F) above :
(H) Inland Transportation charges to Duliajan for above supply including GST:
(I) Insurance Charges @0.5% on E including GST:
(J) Installation and Commissioning Charges:
(K) GST on Installation and Commissioning Charges of J:
(L) Total FOR Duliajan value, (G+H+I+J+K) above :
(M) Total FOR Duliajan Value in words :
(N) Gross Weight& Volume:
(O) Import Content, if any for the above supply:

Note: i) Please indicate HSN /SAC Code of the quoted material & services. Cost of the individual items should be shown separately.

ii) Domestic Bidders must quote inland freight charges upto Duliajan. In case bidder fails to quote inland freight charges, highest freight quoted by domestic

bidder (considering pro-rata distance) against this tender or OIL's estimated freight, whichever is higher, shall be loaded to their offer for comparison purpose.

iii) For enquiries with duty exemption benefit – The items covered under this enquiry shall be used by OIL in the PEL/ML areas issued/renewed after 01/04/99 and hence, applicable customs duty for import of goods shall be zero. However, IGST @5% shall be applicable during import. IGST /Concessional GST @5% shall be applicable for Indigenous bidders also.

8.0 The prices offered will have to be firm through delivery and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and rejected.

9.0 Bids received in physical form against online invitation through e-portal shall be rejected (except the documents specifically called for in hard copies, if any).

Also, modifications to bids received after the bid closing date & time shall not be considered.

10.0 Bids containing incorrect statement will be rejected.

11.0 Bidders shall quote directly and not through Agents in India. Offers made by Indian Agents on behalf of their foreign principals will be rejected. Similarly offers from unsolicited bidders will be rejected.

12.0 Bidder shall accept and comply with the following clauses as given in the Bid Document, failing which bid shall be liable for rejection:

i) Liquidated Damages
ii) Warranty/Guarantee of material
iii) Arbitration / Resolution of Dispute
iv) Force Majeure
v) Applicable Laws

(II) BID EVALUATION CRITERIA

The bids conforming to the specifications, terms and conditions stipulated in the tender and considered to be responsive after subjecting to the Bid Rejection Criteria shall be considered for further evaluation as per General Terms and Conditions for Global Tender and the Bid Evaluation Criteria given below:

1.0 The evaluation of bids shall be done as per the Price Bid Format (SUMMARY) provided under I, C, Commercial Para 7.0 detailed below.

2.0 If there is any discrepancy between the unit price and the total price, the unit price will prevail and the total price shall be corrected. Similarly, if there is any discrepancy between words and figure, the amounts in words shall prevail and will be adopted for evaluation.

3.0 For conversion of foreign currency into Indian currency, B.C. selling (Market) rate declared by State Bank of India, one day prior to the date of price bid opening shall be considered. However, if the time lag between the opening of the bids and final decision exceed 3(three) months, then B.C. Selling(Market) rate of exchange declared by SBI on the date prior to the date of final decision shall be adopted for conversion and evaluation.

4.0 To ascertain the inter-se-ranking, bid prices shall be converted into Indian Rupees and the comparison of responsive bids shall be made as under, subject to corrections / adjustments, if any.

4.1 **When only foreign bidders are involved:**
Comparison of bids will be done on the basis of "TOTAL VALUE" as mentioned in para **I, C. Commercial, 7), (i) (R)** above.

NOTE: *Banking charge in the country of the foreign bidder shall be borne by the bidder. Banking charge 1% for payment through Letter of Credit. If confirmed L/C at buyer's account is required, 1.5 % will be loaded.

4.2 **When only domestic bidders are involved:**

Comparison of bids will be done on the basis of "TOTAL VALUE" as mentioned in para **I, C. Commercial, 7), (ii) (L)** above.

4.3 **When both foreign and domestic bidders are involved**:

The Total Value of domestic bidder as worked out as per para **I, C. Commercial, 7), (ii) (L) excluding (H+I) i.e** Total Value of domestic bidder excluding inland transportation charges with GST and Insurance charges with GST above; vis-à-vis Total Value of the foreign bidder worked out as per Para **I, C. Commercial, 7), (i) (R)** above will be compared.

Note: When more than one domestic bidders fall within price preference range, inter-se-ranking will be done on Grand Total Value basis. If the Government of India revises these evaluation criteria the same as applicable on the bid closing date will be adopted for evaluation of the offers.

5.0 Other terms and conditions of the enquiry shall be as per General Terms and Conditions for Global Tender. However, if any of the Clauses of the Bid Evaluation Criteria (BEC) mentioned here contradict the Clauses in the General Terms & Conditions of Global Tender of the tender and/or elsewhere, those mentioned in this BEC shall prevail.

******

COMMERCIAL CHECK LIST

THE CHECK LIST MUST BE COMPLETED AND RETURNED WITH YOUR OFFER. PLEASE ENSURE THAT ALL THESE POINTS ARE COVERED IN YOUR OFFER. THESE WILL ENSURE THAT YOUR OFFER IS PROPERLY EVALUATED. PLEASE SELECT "Yes" OR "No" TO THE FOLLOWING QUESTIONS, IN THE RIGHT HAND COLUMN.

Sl#	REQUIREMENT	COMPLIANCE
1.0	Whether bid submitted under Single Stage Two Bid System?	Yes / No
2.0	Whether quoted as manufacturer?	Yes / No
3.0	Whether ORIGINAL Bid Bond (not copy of Bid Bond) as per Revised Format(Annexure VII Revised) Sent separately? If YES, provide details	Yes / No
	(a) Amount :	
	(b) Name of issuing Bank :	
	(c) Validity of Bid Bond :	
4.0	Whether offered firm prices ?	Yes / No
4.1	Whether quoted offer validity of 120 days from the bid closing date of tender?	Yes / No
4.2	Whether quoted a firm delivery period?	Yes / No
4.3	Whether agreed to the NIT Warranty clause?	Yes / No
4.4	Whether confirmed acceptance of tender Payment Terms ?	Yes / No
5.0	Whether confirmed to submit PBG as asked for in NIT?	Yes / No
5.1	Whether agreed to submit PBG within 30 days of placement of order?	Yes / No
6.0	Whether Price submitted as per Price Schedule (refer Para 7.0 of BRC Commercial vide Annexure – II)?	Yes / No
7.0	Whether quoted as per NIT (without any deviations)?	Yes / No
7.0	Whether quoted any deviation?	Yes / No
7.1	Whether deviation separately highlighted?	Yes / No
8.0	Whether indicated the country of origin for the items quoted?	Yes / No
8.1	Whether technical literature / catalogue enclosed?	Yes / No
8.2	Whether weight & volume of items offered indicated?	Yes / No
9.0	For Foreign Bidders - Whether offered FOB / FCA port of despatch including sea / air worthy packing & forwarding?	Yes / No
9.1	For Foreign Bidders – Whether port of shipment indicated. To specify:	Yes / No
9.2	For Foreign Bidders only - Whether indicated ocean freight up to Kolkata port (Excluding marine insurance) ?	Yes / No
9.3	Whether Indian Agent applicable ?	Yes / No
	If YES, whether following details of Indian Agent provided?	
	(a) Name & address of the agent in India – To indicate	
	(b) Amount of agency commission – To indicate	
	(c) Whether agency commission included in quoted material value?	
10.0	For Indian Bidders – Whether indicated the place from where the goods will be dispatched. To specify :	Yes / No
10.1	For Indian Bidders – Whether road transportation charges up	Yes / No

	to Duliajan quoted?	
10.2	For Indian Bidders only - Whether offered Ex-works price including packing/forwarding charges?	Yes / No
10.3	For Indian Bidders only - Whether indicated import content in the offer?	Yes / No
10.4	For Indian Bidders only - Whether offered Deemed Export prices?	Yes / No
10.5	For Indian Bidders only – Whether all applicable Taxes & Duties have been quoted?	Yes / No
11.0	Whether all BRC/BEC clauses accepted ?	Yes / No
12.0	Whether Integrity Pact with digital signature uploaded?	Yes / No
12.1	Whether all the clauses in the Integrity Pact have been accepted?	Yes / No
13	Whether all Financial documents as per BRC Financial vide Annexure – II have been uploaded?	Yes / No

Signature _____

Name _____

Designation _____

Bidder's response sheet:

ITEM DESCRIPTION: Supply Installation and Commissioning of DC PCR for S2 RIG-ONE NUMBER

Sl No	Clause No of Tender Document/BEC/BRC, Technical specification/Scope of work, Special Note.	Description	Bidders remarks Complied/Not Complied/Deviation	Bidder to indicate relevant page no of their bid to support the remarks/compliance
1	Scope	This specification covers the requirement for design, manufacturing, supply & commissioning of PLC based DC PCR **(Quantity required : 1 No.)** with Ross Hill AC-SCR system for drilling oil rig application along with commissioning spares, tools, tackles and two years O E M (Original Equipment Manufacturer) spares. The PLC based DC PCR system should be capable of operating one 2000HP draw works (with 2 DC motors), two mud pumps (2 DC motors to each pump) and One Independent Rotary Drive (IRD) (1 DC motor). The system shall also have provision for three 600 VAC feeder circuit breaker to provide power to one Top Drive, one STATCOM and one spare Mud pump (with 2 DC motors) respectively, and two feeder circuit breakers to provide power to Main Transformers (Located in the AC-PCR). The general requirements of the system shall be as per this specification however for any other details, if required, supplier can ask for specific information from OIL INDIA. A layout diagram, showing the relative placement of the DC-PCR is provided in Annexure 3.		

2	**2.1 Dimensional details & operating environment :**	PLC based DC power control room mainly consists of the following and shall have limiting dimensions as given below: **1.DC PCR house** : 12.2 Meter (L) x 3.15 Meter (W) x 3.15 Meter (H); **Weight – 28 Tons ± 10%** (Note: The skid should be four runner type & the spacing between the middle runners to be kept more for better stability. See "Skid" in Para 2.2.b below) **2.Drillers Console** : 0.95 M(L) x 0.325 M (W) x 0.70 M (H) **3.Mud Pump Console** : 0.60 M(L) x 0.340 M(W) x 0.50 M(H) The SCR System shall be capable of delivering rated output continuously in the following environmental condition. i)Max. ambient temperature : 45 degree centigrade ii)Min. ambient temperature : Zero degree centigrade iii) Altitude : 1000m above sea level. iv)Relative humidity : 98% v)Atmosphere : Dusty		
3	**2.2 General construction features of DC-PCR:**	**a) Body / House - The DC power control room should be an outdoor type, weather proof, transportable steel housing with self-supporting skid suitable for onshore oil field application and should not be weighing more than the limiting Dimensions above.** **DC PCR house columns and ceiling frame to be constructed from structural steel seam welded. The outside shall be fabricated from twelve-gauge sheet steel. All corners are to be formed by bending, leaving no sheet edge exposed. Roof of the PCR should have proper slopes so that no water logging takes place during rainy season. The entire body of the PCR should be contained within the skid (without any extension out of the base skid).** **The roof of the PCR house shall be plain, without any protrusion. This is necessary for transportation of the PCR.**		

4		**b) Skid** - The Skid design shall incorporate at least 4(four) longitudinal channels with two mid channels kept sufficiently apart so that the unit can be placed evenly on narrow trailers (general width of trailers 2.4 to 2.6 meters only) with proper load distribution & balancing. Each longitudinal channel of a skid shall be of single length and shall have smooth finish underneath and curve finish at both the end, so that the skid can roll over smoothly on surfaces/truck body without any obstruction. The skid so designed should be sufficiently strong and properly welded at joints and should be able to withstand shocks while being handled and transported over rough and slushy roads/locations. Height of the joint used for the longitudinal members should be minimum 20 cm. Sufficient provision should be available at both ends for lifting the entire PCR (bottom lift arrangement). **The skid shall be properly prepared, and painted with black coal tar epoxy paint with a final thickness of about 200 microns.**		
5		**c) Thermal Insulation** - Three of the PCR walls should be thermally insulated with three-inch thick polystyrene block insulation. Insulation of any other technology may also be acceptable, provided the insulating properties are same as polystyrene. The inside surface of the walls will be finished with a sandwich style insulating board three eight's of an inch thick with white pebble coating on the interior side and aluminum foil on the exterior side.		
6		**d) Panel line up** can be provided in centre or wall attached on both sides with centre corridor. Supplier can offer their standard panel line up arrangement in the PCR. All components of the panels should be accessible from the front of the panels and bus bars should also be accessible for maintenance, if required.		

7		**e) Plug Panel** - Plug panel for the Generator and DC motor cables to be provided on the front end plug panel (facing the DW). In case it is difficult to provide generator plug panel on front end then standard arrangement of supplier i.e. generator plug panel recessed type on the side facing power packs can be provided but height of the such plug panel should be around 1.5 mtrs from bottom of the PCR. The Plug Panel(s) should feature shutter or doors which can be closed/opened smoothly with all the cables plugged in, during normal running condition to avoid ingress of water inside the plug panels due to rain. Suitable fluorescent lighting fixtures should be provided for plug panel(s) lighting. The PCR should have a recessed panel on the rear end to feed electrical equipments mounted on the AC/PCR such as the primary side of the transformers and other electrical equipments as required. Plug Panel for 4 x 20 core cable interconnection with AC PCR to be provided on the front end (DW end).		
8		**f) Indoor Lighting** - Fluorescent lighting fixtures (2 x 40 W) to be provided for aisle lighting. Four- (2) 230 volt Phase – Phase duplex receptacles (suitable for Indian style plug pins) to be included, two at each end of the house. The PCR shall be equipped with emergency lights which shall adequately light up the PCR in the event of a blackout. Additionally, EXIT signs to be also included at each end of the House. 230 V Phase-Phase AC power supply shall be supplied from AC PCR (MCC house) for DC PCR lighting and space heaters supply.		
9		**g) Doors** - Two (2) stainless steel doors with anti-panic locks will be furnished - one at each end and on opposite sides of the house. Both doors shall be designed to open to the outside by pushing on the crash bar. Doors should have a rubber sealing lining. Two complete set of anti panic door locks to be provided with the PCR as spare.		

10		**h) Miscellaneous**: **The DC PCR should be designed for lifting from the bottom.A rubber insulating mat should be provided over the full floor area of the house.** PCR to be provided with four brackets with suitable poles of height 3 meters at the upper four corners to hold flood light poles. The poles shall be detachable type.		
11	**2.3 Air Conditioning**	The PCR should have two (2) Nos Air conditioners each capable of maintaining 22+/-2 degrees centigrade temperature with one air conditioner operating (at outside ambient temperature of 45 deg centigrade at an RH of 98%) with designed full load operating conditions of the PCR. Supplier to decide TR of the AC units to keep the PCR inside temperature at 22+/- 2 Deg C at full load at 98% RH with only one AC unit running at an ambient temperature of 45 deg C. AC units can be split type. A/C units shall be mounted on the PCR skid /roof depending on the design. Supplier to note that power supply for Air Conditioner shall be 415 VAC, 50 Hz, 3 Phase, 3 Wire (without neutral). This supply shall be drawn from the AC-PCR. The Refrigerant used in the Air conditioner system shall be R407C/R410A/Chlorine free Refrigerant. The compressor shall be scroll compressor.		
12	**2.4 Finish**	Surface preparation: Surface preparation before painting shall be done with shot blast to SA2.5 to achieve desired surface roughness. For outer surface, primer paint shall be epoxy primer, intermediate coat shall be high build epoxy paint and final paint shall be full gloss non-yellowing white paint with total DFT of 200 microns. Skid shall be painted with black epoxy paint. Over all dry film thickness of the painting should not be less than 8 mils (200 microns). Surface preparation and painting shall be adequate for the harsh rainy & humid environmental conditions.		
13	**2.5 General internal cubicle**	Following procedure should be adopted for the internal cubicle construction,		

	construction features:	wiring, tagging etc: The enclosure sheet steel surface preparation shall include a three-step (minimum) procedure. Step one should be an acid washed using *Oakite Cryscoat 747LTS* at 120°F. Step two, a rinse using standard city tap water. Step three should be a sealer rinse using *Oakite Cryscoat Ultra Seal, 27-RL-40* at 110°F. The enclosure finish shall be ANSI 61 Light Gray polyester Ferro 5E-115 Series powder paint applied for a total dry film thickness of three mils / 80 microns. The powder application should be done with an IPSI Powder Coating Booth and Electrostatic "Nordson" Powder Spray Guns. The paint shall be oven cured at 400°F for 20 minutes. **External equipment identification nameplates, control and instrument identification plates and operating and warning instruction plates should be anodized aluminum with markings using a photographic etching process and to be attached with corrosion resistant self-tapping screws or rivets. Component tag characters to be minimum 5 mm high.** Wiring is to be done with ITT Surprenant *Exane*. (*Exane* insulation being an irradiation cross-linked polyolefin compound, thermosetting in nature; and rated for 120°C). Conductors are tinned copper, grouped in tied and secured bundles. The colour of insulation of all control wiring should be white or light grey. Wire within the cubicle is 1.5mm2 / 14 AWG minimum. Wire within guarded electronic enclosures may be sized to suit the lower current levels and higher wiring density often present in such devices. Wiring identification markers should appear at both ends of each wire which cannot be visually traced end to end. The wire numbers should correspond to numbers appearing on schematic drawings. All wiring to be routed to avoid sharp edges wherever possible and protected by bushings and/or auxiliary wrapping where it passes over sharp edges, through barriers and at service loops. All terminations should have margin to allow a minimum of one re-lugging operation. Ring lugs to be used at all critical connections such as CT connections and main bus taps. Components, including modules and printed wiring boards to be connected using split lugs allowing removal of the device without removal of		

		screws. No more than two wires or lugs to be attached under any one screw. All terminal strips to have minimum 2 Nos spare terminals to accommodate any modification required during commissioning / operation. Bus bars shall be of tinned copper. Hardware for all bus connections should be zinc plated and passivated hardware as per property class 8.8 and shall be provided with plain and spring washers with hex nuts as per standard design. **All the bus bars should be marked with R, Y and B for ease in identification.** All items mounted in the cubicles should be accessible from the front and easy maintenance access should be available in the panels for removal and fitment of the items in the panels. All the indication lamps should be high visibility LED type with LVGP (low voltage glow protection).		
14	3.0 **TECHNICAL DETAILS & SPECIFICATION:**	The technical details & specifications covered under this part are broad technical details of the equipments required.		

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<tr>
<td>15</td>
<td>3.1 ENGINE / GENERATOR CONTROL PANEL (4 NOS).</td>
<td>3.1.1 Salient features of Engine / Generator controls :
The engine & generator control system should be suitable for 4 Nos. KATO/BHEL make 1430 KVA, 600V, 3-Phase, 50 Hz, 1000 RPM, 0.7 pf lag alternators, driven by Caterpillar D399 / 3512 engines / equivalent engines. Main bus bar to be designed for a minimum of 65 KA Fault current and it shall be able to take rated current continuously with simultaneous operation of all the drives and feeders.
Control panel should be suitable for engine provided with electrical actuator with 40 mA at no-load and 160 mA at full load extended up to 200 mA.
Control panel should be suitable for generator provided with electrical exciter field with excitation characteristics of 6 amps maximum current @ 125 VDC or 12 amps maximum current @ 63 VDC suitable for KATO/BHEL Alternators.
Power supply to exciter PCB (preferably identical to HGC part # P359T) shall be from a 600:0-120-240 VAC (at least 1.8 kVA) transformer.
Control panel to have tinned plated insulated, copper bus bar of adequate design suitable for 600V AC application as per international standard. Connection leads from generator panel to the socket board should be of adequate size to carry 1500A continuous current.</td>
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<td>16</td>
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<td>3.1.2 Each engine generator control panel to include minimum following equipment:</td>
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<td></td>
<td></td>
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<table>
<tr><th>Item</th><th>Qty</th><th>Description</th></tr>
<tr><td>1</td><td>1</td><td>1600 AF 1600A SIEMENS/MERLIN GERIN/ABB ACB rated at 600V AC, 3-pole, 50 Hz, with adjustable trip, Draw-out type. Each breaker to be manually chargeable, electrically closed and electrically tripped and with auxiliary contacts. The Generator incomer circuit breaker to be furnished to be directly interchangeable with the SCR circuit breaker.
The interrupting rating of the breakers will minimally be 65</td></tr>
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				Kilo Amperes. ▪ Auxiliary contacts for space heater.			
			2	1	Voltmeter, 0-750 VAC; DB40 size meter mounted on cubicle door		
			3	1	Ammeter, 0-2000 AAC; DB40 size meter mounted on cubicle door		
			4	1	Kilowatt Meter, (-)150-0-1500 kW; DB40 size meter mounted on cubicle door		
			5	1	Kilovars Meter, (-)150-0-1500 KVAR; DB40 size meter mounted on cubicle door		
			6	1	Generator Exciter Amperage; meter mounted on cubicle door		
			7	1	Actuator Amperage; meter mounted on cubicle door		
			8	1	Energy-consumed meter in the form of Kilowatt Hours Digital type with LCD screen		
			9	1	Six- (6) channel RTD meter to indicate generator winding temperature with alarm output relay contact to trip circuit breaker upon high temperature reading. RTD meters should be suitable for both 10 ohm & 100 ohm RTDs with selector switches. In case this is not possible, **supplier to furnish four- (4) RTD Meters factory calibrated for 100-ohm platinum as spares**		
			10	1	Engine Control Switch/Pushbutton **"**OFF-IDLE-RUN "		
			11	1	Generator **"RUN"** Indicating Lamp (White) LED type		
			12	1	Generator **"ON LINE"** Indicating Lamp (Red) LED type		
			13	1	Generator Space Heater Pilot Lamp. LED type		
			14	1	Reversed Power **"TRIP"** indicating lamp LED type		
			15	1	Manual Engine Speed Adjust Potentiometer on cubicle door		

16	1	Manual Voltage Adjust Potentiometer on cubicle door
17	1	Analog AC Module of Hill-Graham / Ross Hill design. Supplier to furnish the details of AC module with the offer. Ross Hill standard Analog AC Modules with external exciter PCB for the Generator panels shall be acceptable to ensure interchangeability with other AC modules of OIL's rigs. Analog AC module must contain both voltage regulator and engine speed governor with kW and kVAR load sharing with standard safety features.
18	1	Exciter PCB Ross Hill design (to be mounted separately and preferably identical to HGC part # P359T), if required.
19	1	Phase rotation relay for phase sequence check on the generators with interlocking for synchronisation
20	1	Set of transformers, resistors, fuses, relays etc
21	1	Engine protection circuit for following : Engine Overspeed with engine shutdown circuit Engine low lube oil pressure with breaker trip circuit Engine High water, Air, Oil temperature circuit with breaker trip. Engine fault should have audio visual alarm.

One Set of 2 x 12V DC dry type rechargeable batteries for Engine & Generator safety system along with battery charger to be provided in one of the generator panel.

17		**3.1.3 SYNCHRONIZING SYSTEM :** The Synchronizing System shall be designed to manually synchronize the selected generator.			

Item	Qty	Description
1	1	Synchronizing system consisting of components and a sync section display panel which will be conveniently located to easily synchronize each Engine/Generator

			through high visibility sync lights and synchroscope. The sync section to have the following auxiliary controls and components:		
		2	1	Frequency meter and associated selector switch selectable to Main Bus and Generators 1/2/3/4	
		3	1	Voltmeter and associated selector switch selectable to Main Bus and Generators 1/2/3/4	
		4	1	Sync Switch: GEN1 – GEN2 – OFF – GEN3 – GEN4	
		5	1	Basler Veri-Sync Relay	
		6	1	Synchroscope	
		7	SET	Synchronizing lights for synchronization with Generator Circuit Breakers.	
		Sync Switch and Veri-Sync relay should be mounted in one of the Gen panels whereas Frequency meter, Voltmeter, Synchroscope & Sync lamps should be mounted in a separate box/panel visible from all the Generator panels.			
18	**3.2 FEEDER PANEL- 1 (One) No**	A separate feeder panel should be provided to house following items: 3.2.1 **TRANSFORMER FEEDER BREAKERS** The feeder panel to be consisting of the following main equipments:			
		Item	Qty	Description	
		1	2	**1000 - 1200 Amps, 600 Volts, 3-Pole, manually operated Siemens / Merlin Gerin/ABB, MCCBs Type feeder circuit breakers having breaking capacity of 65 KA each for 2 X 600 KVA 600/415V 50 Hz, Delta/Star Dry Type Power Transformer for powering auxiliary AC loads and rig lighting system. MCCBs should be settable from 0.4 x 1 of rated current with electronic release. The interrupting rating of the breakers will minimally be 65 Kilo Amperes.**		

<table>
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<td>19</td>
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3.2.2 POWER LIMIT CONTROLLER

The Power Limit Controller is to be provided to monitor the KW & “I” Total of each of the engine –generator sets. If either of these parameters reach its limits, the Power Limit Controller to reduce the power being delivered to the loads, so that the load on each generator is held at its limit until the loads on the SCR drives are reduced (by other action) to a level below the generator limit. The Controller will allow for adjustment of each parameter independent of the other.

The range of adjustment will allow the Power Limit to be lowered to 80% or raised to 110%. The Controller will have built-in under-frequency circuitry, which shall keep the engines operating when sudden engine problems, such as bad fuel, may cause the engine to shutdown. A meter on the Drillers Console is to be provided to indicate percentage Power Limit. A warning lamp is illuminated on the Drillers Console at a load level just below the power limit.
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<td>20</td>
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<td>
3.2.3 HANDS-OFF CIRCUIT (HOC)

The HOC shall be designed to supply power for the engine actuator starting circuit, suitable for supplying CAT D399 / 3512 engines with an actuator current of 40-200 mA and the pulse pick-up circuit respectively in each of the AC generator control modules. The items to be included shall be as follows:

<table>
<tr><th>Item</th><th>Qty</th><th>Description</th></tr>
<tr><td>1</td><td>1</td><td>CPT fused on the primary and secondary.</td></tr>
<tr><td>2</td><td>1</td><td>Single-phase diode bridge.</td></tr>
<tr><td>3</td><td>1</td><td>Capacitive DC filter</td></tr>
<tr><td>4</td><td>1</td><td>Voltage clamping circuit.</td></tr>
<tr><td>5</td><td>2</td><td>12V Batteries dry rechargeable type</td></tr>
<tr><td>6</td><td>2</td><td>Circuit breakers—DC feeders.</td></tr>
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<td></td>
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</table>

21		**3.2.4 GROUND FAULT DETECTOR CIRCUIT (in the 600 VAC Circuit):** Ground Fault detector circuit shall mainly consist of the following: **Audio Alarm in PCR in addition to indication at Driller's Console will be provided for ground fault system.** Ground fault circuit should be of standard design of OEM connected to each phase and to the ground through individual phase lamp (filament type). In case of AC ground fault the phase which is grounded will have lower illumination in the lamp connected to that phase and in DC ground fault all the 3 lamps will glow brighter. Any other better arrangement shall be acceptable if furnished with full details.		

Item	Qty	Description
1	1	AC & DC Ground Fault detector PCB
2	3	AC ground detection lamps – One lamp per phase
3	1	600 VAC ground test button
4	1	AC/DC ground fault relay
5	1	Percent DC ground detection meter
6	1	Percent AC ground detection meter

<table>
<tr>
<td>22</td>
<td>3.3 FEEDER BREAKER - 3 (Three) Nos:</td>
<td>Three nos. of AC Feeder breaker for supplying 600 VAC power to external drives from main bus shall be provided at a convenient location in the PCR for top drive,statcom and third mud pump respectively. The feeder breaker shall be as per following details.
<table>
<tr><th>Item</th><th>Qty</th><th>Description</th></tr>
<tr><td>1</td><td>3</td><td>1600 AF 1600A SIEMENS/MERLIN GERIN/ABB ACB rated 600V AC, 3-pole, 50 Hz, 65 kA with adjustable trip, Draw-out type. Breaker to be manually chargeable, electrically closed and electrically tripped and with auxiliary contacts. The Feeder breaker to be furnished to be directly interchangeable with the SCR and generator circuit breakers.
UV coil shall not be required for the Feeder breaker.</td></tr>
</table>
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<tr>
<td>23</td>
<td><u>3.4 SCR CONTROL PANEL (5 Nos).</u></td>
<td>3.4.1Salient features of SCR panels :
The SCR Control system and bus bar shall be suitable for driving two DW motors, two Mud pumps (each mud pump driven by two DC motors), and one IRD motor. All motors will be 1000 HP, 750 V DC, separately excited shunt wound motors BHEL 4903CX / GE752R models. Design should have provision for assigning at least 2 drives (motors) from the one SCR panel (see section 3.6 “SCR assignment” below).
SCR controlled drive panel should be of standard Ross Hill design with analog DC regulator module for shunt motors with regenerative / dynamic braking.
Control panel to have tinned plated insulated bus bar of adequate design suitable for 600V AC application as per international standard.
Hardware for all bus connections should be zinc plated and passivated hardware as per property class 8.8 and shall be provided with plain and spring washers with hex nuts as per standard design
Each SCR panel to consist of the following main equipments:</td>
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</table>

Item	Qty	Description
1	1	1600 AF, 1600 A rated SIEMENS/MERLIN GERIN/ABB ACB rated 600V AC, 3-pole, 50 Hz, 65 KA with adjustable trip, Draw-out type. Each breaker to be manually Chargeable, electrically closed and electrically tripped and with auxiliary contacts. **The SCR Converter circuit breaker to be directly interchangeable with the Generator incomer circuit breaker.** The SCR breakers will have the same auxiliaries as the generators.
2	1	Voltmeter, 0-1000 V_{DC}
3	1	Ammeter, 0-2000 A_{DC}
4	1	SCR **"ON"** indicating lamp, (Red) LED type
5	1	6-pulse, 2000 amp @ 750 V_{DC}, vertical air cooled SCR Bridge. The bridge shall be protected using semiconductor type fuses with form C contacts, which are activated when the fuse opens.
6	1	Surge Suppression **"ON"** Indicating Lamp (Green) LED type.
7	1	AC bus surge suppression module to clamp any transient voltages that may be damaging to the SCR devices. The surge suppressor to consist of a fused enclosure of metal oxide varistors (MOVs). Each SCR panel should have individual surge suppression MOVs connected in Delta mode.
8	1	Set of DC assignment contactors. DC assignment contactors should be suitable to break full load current at rated power. GE Series IC2800 or Siemens Type 700 contactors

				shall be provided. Supplier to furnish full details of the proposed contactors.		
			9	1	Cubicle Space Heater. (To be “ON” when SCR is not in operation.)	
			10	1	Analog DC Module of Ross Hill design for shunt motors and regenerative braking for firing control of the SCR drive. Full details of analog DC modules to be furnished along with the offer.	
			11	1	**3 phase 600 V AC twin blower for cooling of the SCR bridges. The motor is to be started with a manually operated switch and SCR should be assignable only if the blower is running. In case blower failure takes place during SCR working, SCR breaker to trip.** **The rating of the blower must be adequate for proper cooling of the SCR bridge**. Bidder to mention the rating of the blower motor with the offer.	
			12	1	**One logic indicator PCB with LED to show the flow of -14V signal in the assignment circuit of the SCR drive**	
			Armature reversing feature should be available in the system for the DWA, DWB & IRD motors. Cutler Hammer/NOV/Siemens or equivalent make reversing contactor to be used in the SCR panels for DWA, DWB & IRD motors reversing. Field interlocks such as field loss contacts etc to be included in the system design so that assignment can not be completed in case field loss relay does not pick-up. Drive / assignment fault alarm should be available in the DC PCR with external electrical HOOTER.			

<table>
<tr>
<td>24</td>
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<td>
3.4.2Draw works Braking

a) Regen Braking - The system shall be designed to provide regenerative braking facility on DWA motor to slow the Draw works motors from full speed to a preset cathead speed within 10 to 15 seconds after the foot throttle is released. The power generated by the freewheeling DC motors is to be fed back into the 600 volt bus and absorbed by the engine generator sets that are on line. During normal operation of the Draw works the regenerative brake should be non-operative. If, at any time, the motor speed is higher than the DW throttle setting and the foot throttle is not in use and no DW clutch is engaged (to be achieved through high & low clutch pressure switches in Driller's Console), the brake circuit to engage and reduce the motor speed to the hand throttle setting.

There should be maximum current limit feature in the DC Module to prevent over speeding of the engine-generator set during re-generative mode. Controls shall ensure that change over of Forward-Reverse Contactors from Forward to reverse and vice-versa & assignment contactors On-OFF-On take place at Zero current.

b) Dynamic Braking - Alternatively, system may be designed with dynamic braking (Resistor bank based), in which case, bidder to quote for the Resistor Bank (forced Cooled), as well as Brake control panel (If required), and all accessories.
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<td>25</td>
<td>3.5 FIELD SUPPLY CUBICLE</td>
<td>
a)The field supply cubicle should include Ross Hill type standard diode & thyristor Field Supply sections for the 7 DC motors. The equipment to be consisting mainly of the following:

<table>
<tr><th>Item</th><th>Qty</th><th>Description</th></tr>
<tr><td>1</td><td>3</td><td>Diode Passive field supply for DWA , DWB & IRD motors</td></tr>
<tr><td>2</td><td>2</td><td>Diode-Thyristor based Dual motor Active field supplies for Mud Pumps MP1 & MP2</td></tr>
<tr><td>3</td><td>2</td><td>Field supply regulator PCB for active field supplies for MP1 & MP2</td></tr>
</table>
</td>
<td></td>
<td></td>
</tr>
</table>

		<table><tr><td>4</td><td>7</td><td>HOA switches for field supplies</td></tr><tr><td>5</td><td>7</td><td>Field current ammeters for all motors</td></tr><tr><td>6</td><td>5</td><td>Padlock Lock Out Devices</td></tr><tr><td>7</td><td>2</td><td>Selector Switches for each pump (MPA+MPB / MPA / MPB)</td></tr><tr><td>8</td><td>2</td><td>POTs for A or B single motor operation current command / feedback</td></tr><tr><td>9</td><td>2</td><td>Field imbalance illuminated reset push buttons for dual motor field supplies</td></tr></table>		
26		b)Mud pump field supplies shall be designed to facilitate operation of mud pump motors together or individually (A or A+B or B). Corresponding Current limits for mud pump operation with one motor or two motors will be automatic adjustable as per field supply assignment through DC Modules.		
27		c)Field regulator PCB should be able to regulate the B motor SCR field supply with respect to the feedback command signal of Diode field supply of A motor in case of active field supply unit for MP1 & MP2.		
28		d)For single motor operation of MP1 or MP2, current command / feedback signals should be generated from external POTs for field supply regulator PCB.		
29		e)Field supply transformers should have tappings for adjustment of field current of the DC motors. Required fused protection for transformer primary and secondary should be provided.		
30		f)Field supplies should be able to supply 57 Amps DC (OIL Motor) to the DC motor shunt field windings in hot motor condition. However the field currents & voltage should be adjustable to match with the DC motor requirements of BHEL 4903CX / GE752R models.		
31		g) DC motor Field supplies to have Hands-Off-Auto (HOA) switch to facilitate energizing of field supplies without drilling function is assigned. In Auto mode required MCC interlocking should be built into the field supply circuits to ensure that field is energized only after DC motor blower picks up. An audible alarm along with an indication shall be activated inside the DCPCR and Drillers console respectively, in case of failure of Blower motor of the assigned drive.		

<table>
<tr><td>32</td><td></td><td>h)Hard wired interlock of Field loss relays should be used for positive interlocking in all assignment circuits.</td><td></td><td></td></tr>
<tr><td>33</td><td></td><td>i)All field supplies shall have independent DC ammeters on the cubicle door.</td><td></td><td></td></tr>
<tr><td>34</td><td>3.6 SCR Assignment:</td><td>There should be individual assignment switches for each of the SCR panel. All assignment switches shall be of 3 position heavy duty type with vertical position of knob as OFF position. Each SCR unit shall be able to drive two different functions. Following is the proposed assignment:
<table>
<tr><td></td><td>Left position</td><td>Center</td><td>Right Position</td></tr>
<tr><td>SCR1</td><td>DWA</td><td>OFF</td><td>MP1</td></tr>
<tr><td>SCR2</td><td>MP1</td><td>OFF</td><td>DWB</td></tr>
<tr><td>SCR3</td><td>IRD</td><td>OFF</td><td>DWA</td></tr>
<tr><td>SCR4</td><td>DWB</td><td>OFF</td><td>MP2</td></tr>
<tr><td>SCR5</td><td>MP2</td><td>OFF</td><td>IRD</td></tr>
</table></td><td></td><td></td></tr>
<tr><td>35</td><td>3.7 EXTERNAL CONNECTIONS:</td><td>The rig external connections from the DC PCR to different loads and drives should be through easily removable type plug & receptacles and following should be taken care of in the design:</td><td></td><td></td></tr>
<tr><td>36</td><td></td><td>3.7.1 External power connections to Alternators, Top drive feeder, Statcom feeder, Mud pump feeder and Transformers in AC PCR and DC motor power connection to be done through single pole Pyle National make power plug & sockets of suitable rating. Plugs & sockets (crimped type) should be suitable to accommodate 300 sq mm flexible copper cable with built-up conductor dia of 26 mm & OD of 35 mm (+/-1 mm). The alternator socket board should be provided with adequate nos. of sockets per phase to carry 1500 A continuous current per phase.</td><td></td><td></td></tr>
</table>

37		**3.7.2 Each of the actuator & MPU signals shall be through two separate 1.5 sq mm x 4 core cables. The exciter field supply, RTD and engine protection circuits shall be connected through a 2.5 sq mm x 20 core cable. Space heater connection for Alternators shall be through MCBs in the distribution panel. The pin configuration for 20 core cable Alternator control connections is enclosed as Annexure-1. Pyle National make star line plugs & sockets (crimped type) should be used for Generator control connections for 3 core & 20 core cables.**		
38		**3.7.3 Exclusive 20 Pin plugs & sockets to be provided for shunt fields of DC motors & control connections. The DC motor field supplies to run through 2 x 6 cores of 2.5 sq mm x 20 core cable. Space heater connections, air flow switch & lock out switch connections to the DC motors shall also be through this 20 core cable. The pin configuration for 20 core cable for DC motor control connections is enclosed as Annexure – 2. Space heater connection for DC motors shall be through MCBs in the distribution panel. Pyle National - Star Line make plugs & sockets (crimped type) should be used for Motor control connections for 20 conductor cables.**		
39		3.7.4 All control interconnections for AC PCR shall be through 2.5 sq mm x 20 core cables. Pyle National - Star Line make plugs & sockets (crimped type) should be used for interconnections for 20 core cables.		
40		**3.7.5 The Plug Panel(s) should feature shutter or doors which can be closed/opened smoothly with all the cables plugged in, during normal running condition to avoid ingress of water inside the plug panels due to rain.**		
41		**3.7.6 Suitable fluorescent lighting fixtures should be provided for plug panel(s) lighting..**		
42		**3.7.7 To avoid damage due to sharp bend and injury to the cable due to its self weight, sockets should be mounted on socket board of slant stair case design.**		

43		**3.7.8Earthing cable from earth bus bar should be brought out up to the socket board for termination at the earth pit.**		
44		**3.7.9Sufficient redundancy should be provided in sockets consisting of each ratings by quantity proportion and at least one for each rating. PCR socket board to have extra socket holes of each rating with blank covers for use to meet exigency.**		
45		**3.7.10Air-conditioner incomer supply from AC PCR shall be through a 4-pin 100 Amps Appleton plug & socket. DC PCR lighting & space heater supply from AC PCR shall be through a 4 pin 60 Amps Appleton Plug & socket.**		
46		**3.7.11 10% extra plug and sockets of each type & rating shall be supplied as loose spare items by the supplier with minimum 1 No. of each type. Supplier to furnish list of plugs & sockets used and spare qty supplied. This should be finally included in the 2 years spares list by supplier.**		
47		**3.7.12 Oil India shall supply all external cables except the PLC communication cables for Driller Console & MP Console. PLC communication cable of 120 meter length for Driller's Console and 30 meter length for Mud Pump Console shall be in supplier scope and to be supplied with the DC PCR. One PLC cable each of the above lengths should be supplied as spare for both Drillers console and mud pump console. Suitable repeaters for the PLC cable shall be incorporated in the design for effective transmission of signal over a long distance. The termination of all external cables to the loose plugs & sockets supplied by the supplier shall be the responsibility of Oil India. The outside diameters of cables for Plug grommet sizing is furnished by Oil India in respective Annexure.**		

48	**3.8 SPACE HEATERS**	The space heater supplies to be suitable for 500 W, 230 VAC rating of the space heaters. Space heaters shall be powered through 230 V AC Phase-Phase 3 wire supply from AC PCR (MCC house). Space heater connections shall be required for all Seven DC motors & four alternators and to be provided thru the 2 Pole MCBs in the distribution panel. DC motor space heaters will remain energized, if DC motor blower is not operational. Alternator space heaters to remain energized, if Alternator is not operational. All cubicles shall have their independent space heaters. Any other method proposed by supplier for supply of Space heaters meeting the functional requirement can be accepted, if full details are provided by supplier.		
49	**3.9 PLC CONTROL PANEL:**	**3.9.1 The programmable logic control panel has to perform the following functions for over all SCR control, inter lock with accessories and monitoring.** The System Host PLC shall be a high speed, versatile modular PLC. The PLC to be used shall be suitable for serial communication with remote consoles and other rig components and devices.		
50		**3.9.2 The PLC shall incorporate the SCR bridge assignment logic.** **The PLC system shall have provision for twisted pair cable for communication with the remote Racks in Driller & MP Console. A signal repeater shall also be provided in the design. The controls including PLC should be suitable for a cable length of up to 120 meters form DC/PCR to Driller Console to meet cluster drilling requirement.** **The PLC shall have provisions for interfacing with the LAN. Interface with controls and indicators of the driller's console shall be via the field I/O units. PLC shall provide status, alarm and diagnostic tools via local annunciation functions. PLC will provide automatic starting of Mud Pump and Draw works auxiliaries with indicating lights on console. A provision is to be kept for future expansion (of the third mud pump). Suitable PLC cable shall be**		

<table>
<tr><td></td><td></td><td>provided from the PLC cubicle to the socket board (DW End) of the DC PCR for future use of the third mud pump. The supercharger pumps shall be started & stopped manually from Driller’s Console.
There is no remote PLC in the AC/PCR for MCC interlocking for the DC motor control logics. All PLC relay inputs/outputs for auto starting of DC motor auxiliaries and alarm functions through MCC in AC PCR should have interface relays in PLC cubicle with adequate contact ratings.

Fault storage facility should be available through the PLC in the system with built-in self diagnostic features.</td><td></td><td></td></tr>
<tr><td>51</td><td></td><td>3.9.3 Touch Screen Display - PLC shall have touch screen for all miscellaneous indications for all generators & all SCR panels, indications for various drives, ground faults, power limits, Driller assignment, Hour meter, current & voltage metering, trending of historic data & faults etc. See Clause 3.9.6 (below) for full details.</td><td></td><td></td></tr>
<tr><td>52</td><td></td><td>3.9.4 Bypass Mode - The PLC shall have a bypass switch (FOR MANUAL BACKUP MODE) to allow for minimum assignment in the event there is a failure in the PLC.

The bypass (FOR MANUAL BACKUP MODE) will require a twenty- (20) conductor cable to be connected between the PCR and the Driller’s Console. The assignment furnished in the bypass mode allow one- (1) drive per SCR bay when the by pass mode is selected. Since there are 5 SCR cubicles there could be 5 DC Motors available. In PLC By-Pass mode following assignment should be available :
<table>
<tr><th>SCR 1</th><th>SCR 2</th><th>SCR 3</th><th>SCR 4</th><th>SCR 5</th></tr>
<tr><td>DWA</td><td>MP1
(MP1A & MP1B motors)</td><td>DWB</td><td>MP2
(MP2A & MP2B motors)</td><td>IRD</td></tr>
</table></td><td></td><td></td></tr>
</table>

<table>
<tr><td></td><td></td><td>PLC cubicle should be provided with CVT of adequate rating to avoid any effect of SCR system harmonics. In the bypass mode apart from the normal operations, the meters (DC ammeters and voltmeters of the SCR inside DCPCR and Drillers console) of the assigned drive, along with Mud pump console and foot throttle should be fully functional.</td><td></td><td></td></tr>
<tr><td>53</td><td></td><td>3.9.5 PLC SYSTEM :
The PLC system shall mainly consist of the following:
<table><tr><th>Item</th><th>Description</th></tr><tr><td>1</td><td>Siemens S7-300 Modular Mini-PLC</td></tr><tr><td>2</td><td>32 Bit, Fixed & Floating Point CPU</td></tr><tr><td>3</td><td>Up To 1024 Digital Inputs / 1024 Digital Outputs</td></tr><tr><td>4</td><td>Up To 256 Analog Inputs / 256 Analog Outputs</td></tr><tr><td>5</td><td>Complete Instruction Set With “Built-In” Functions</td></tr><tr><td>6</td><td>Built-In Self Diagnostics</td></tr><tr><td>7</td><td>System Status & Alarms When Used With Remote Display Screen</td></tr><tr><td>8</td><td>Fiber Optic Communication Capability</td></tr><tr><td>9</td><td>One Remote Graphic “Touch” Screen Display</td></tr></table>
Note : Above is for reference only. Supplier to furnish full details of PLC offered.</td><td></td><td></td></tr>
<tr><td>54</td><td></td><td>3.9.6 TOUCH SCREEN :

A touch screen / soft button display screen should be provided in the PLC cubicle / Field supply cubicle. The following represents data to be displayed preferably on multiple screens.

MISCELLANEOUS INDICATORS
PLC System Communication OK
Generator ON (For each Generator)
Ground Fault
Power Limit</td><td></td><td></td></tr>
</table>

		Driller Console Assignment. SCR INDICATORS (To be repeated for each SCR panel) SCR ON Bridge Temp Switch B A Blown Fuse Bridge Current Gauge B Blown Fuse Bridge Volts Gauge C Blown Fuse Speed Reference Contactor Assignments % Power Limit MUD PUMP INDICATORS (To be repeated for each Pump) MP 1-2 Field ON MP 1-2 Chain Oilier ON MP1(both A & B motors) Blower ON MP 1-2 Liner Wash ON Charging Pump 1 ON Charging Pump 2 ON MPA Armature Current MPB Armature Current MPA Field current MPB Field current DRAWWORKS INDICATORS (Repeated for Each Motor) DW Field ON DW Field current DW Blower ON DW Lube pump ON DW Armature current		

<table>
<tr><td></td><td></td><td>IRD INDICATORS
IRD Field ON
IRD Field current
IRD Blower ON
IRD Lube pump ON
IRD Armature current
GENERATOR CUBICLE INDICATORS (Repeated for each Generator Cubicle)
Running Hours for Power pack</td><td></td><td></td></tr>
<tr><td>55</td><td>3.10 <u>DRILLER CONSOLE</u>:</td><td>3.10.1 Driller Console construction :
The Driller’s Console to be a pressurized stainless steel enclosure, constructed suitably for installation in Class 1, Division 2 (IEC Zone 2) locations as per International standard.
The console should be constructed of 12 gauge No. 304 stainless steel and the hand throttle wheels of solid stainless steel. Each hand wheel will drive two (2) independent potentiometers to provide 100% backup of the throttle function. The console should be water tight and include a gasketed door.</td><td></td><td></td></tr>
<tr><td>56</td><td></td><td>a) Continuous Purging - The console should be equipped with approved purging for application in a Class I Division 2, Group D Hazardous area. A rig air supply fitting (1/4" BSP male threads) will be provided for connection to an external 85 to 150 PSI rig air supply. As rig air supply is normally contaminated (with moisture and oil) an air drier and filter assembly shall be supplied along with the driller console separately. An internal pressure regulator in the console is to be provided to maintain the internal pressure of the Console.</td><td></td><td></td></tr>
<tr><td>57</td><td></td><td>b) The console to have the following standard equipment and features:
<table>
<tr><td>Item</td><td>Qty</td><td>Description</td></tr>
<tr><td>1</td><td>5</td><td>Assignment Switches SCR 1-5</td></tr>
<tr><td>2</td><td>1</td><td>Rotary Table Current Limit POT</td></tr>
<tr><td>3</td><td>2</td><td>Draw works Speed Control (Hand throttle)/IRD Speed control (Hand throttle)</td></tr>
</table></td><td></td><td></td></tr>
</table>

			4	2	Draw works Switch "FWD-OFF-REV"/ IRD Switch "FWD-OFF-REV"		
			5	2	Mud Pump Speed Controls (Hand throttle)		
			6	2	MUD PUMP “On-Off” selector switch		
			7	2	Super charger “Start-Stop” selector/ pushbutton switch		
			8	1	Mud Pump Console / Driller’s Console selector switch		
			9	1	“E” Stop Push button # 1 – Shuts off all drives. Should be fitted with a cover / flap to prevent accidental activation.		
			10	1	“E” Stop Push Button # 2 – Shuts off all Generators. Should be fitted with a cover / flap to prevent accidental activation.		
			11	1	Alarm Silence spring return switch		
			12	1	Lamp test spring return switch		
			13	1	PLC “BYPASS” Switch		
			14	1	RT Override Push Button		
			15	1	Power Limit Meter 0-100%		
			16	4	Generator “ON” Lamps (Red)		
			17	5	SCR “ON” Lamps (Green)		
			18	3	Draw works DWA & DWB Blower “ON” Lamp (Red) */IRD Blower ON		
			19	1	Draw works lube pump “ON” Lamp (Red)		
			20	1	IRD “ON” Lamp - Red		
			21	2	Mud Pump Auxiliaries “ON” Lamps (Red) *		
			22	1	Super Charger “On” Lamp (Red)		
			23	1	Power Limit Lamp (Amber)		
			24	1	Console Purge Loss Lamp (Amber) *		
			25	1	Ground fault lamp (Yellow)		

			26 | 1 | Audible alarm activated for items marked (*) 27 | Lot | Plugs & receptacles for console connection 28 | 5 | DC Current Meters for amperage of Drilling motors (MP1, MP2, DWA, DWB & IRD) 0-2000 A 29 | 1 | RT Torque meter 30 | 1 | Set of relays, fuses, sockets etc 31 | 1 | PLC remote rack 32 | 1 | DW / RT Clutch pressure switch 33 | 2 | DW Hi / Low clutch pressure switches. 34 | 1 set | IRD controls including hand throttle **Note: Any other item required for Driller Console as per system design to be included by supplier. Provision for the third mud pump to be kept in the drillers console including space for the hand throttle, control cable and socket, PLC Communication cable, indication lamp, meter and on-off selector switch etc.**		
58		**c) Control circuit shall be designed so that Super Chargers can be made operational irrespective of mud pumps assignment. Mud pumps can be made operational without working of super chargers.**		
59		**d) Emergency Stop Push-Buttons - The "E" STOP PB# 1 will trip all SCR breakers and will cut off the power to the console. All DC motor blowers and IRD/Draw-works/MP auxiliaries also should stop. The "E" STOP PB# 2 will trip all Generator Breakers, and cut off total Electrical Power supply to the Rig. Both the "E" STOP push buttons shall be hard wired and fully operational in the PLC BYPASS mode.**		

60		**e) PLC "Bypass" mode - When PLC Bypass mode is selected one dedicated SCR for one DC motor shall be available. The assignment to be provided is one (1) motor per SCR bay. Since there will be 5 SCR cubicles there could be 5 drilling motors available for emergency operation in manual mode. In the bypass mode apart from normal operation the meters (DC ammeters and voltmeters of the SCR inside DCPCR and Drillers console) of the assigned drive, along with Mud pump console and foot throttle should be fully functional.**		
61		**f) Provision for Running RT from DW** – The RT may be run from DW, in case of failure of RT drive or any other reason. The DW / RT selection should be through a Pressure switch in the Driller Console. Pressure switch to pick-up when driller operates Rotary Clutch as per standard Ross Hill design. There should be separate pressure switches for Hi & Lo clutch engagement sensing and regenerative brake should operate only when no clutch is engaged.		
62		3.10.2 Driller's Foot throttle **The foot-throttle to be manufactured of 12 gauge No. 304 stainless steel throughout, built to withstand the environment normally encountered on the rig floor. It should contain dual stainless steel return springs to provide a fail-safe return to the off position in the event of the single spring failure. Provisions for a dry air connection to the electrical compartment are to be included. The foot throttle connects directly to the Driller's console through a three-conductor cable. A spare plug is to be provided with the foot throttle. The foot throttle shall be fully functional in the PLC BYPASS mode.**		

<table>
<tr>
<td>63</td>
<td>3.11 <u>MUD PUMP CONSOLE</u>:</td>
<td>The mud pump console should be manufactured of 12 gauge No.304 stainless steel and the hand throttle wheels of solid stainless steel. Each hand throttle will drive two (2) independent potentiometers to provide 100% backup of the throttle function. The console will be watertight and include a gasketed door. Purging is not required as MP console will be placed in a safe area.

The console shall include the following main controls and indicators:

<table>
<tr><th>Qty</th><th>Description</th></tr>
<tr><td>2</td><td>Mud Pump Speed Controls Hand Throttle</td></tr>
<tr><td>2</td><td>Mud Pump "ON-OFF" Switches</td></tr>
<tr><td>2</td><td>Mud Pump "ON" Indicating Lamps (Green)</td></tr>
<tr><td>2</td><td>Mud Pump DC Current meter 0-2000A</td></tr>
<tr><td>1</td><td>PLC remote rack</td></tr>
<tr><td>Lot</td><td>Plugs & receptacles for console connection</td></tr>
</table>
Note: Any other item required for MP Console as per system design to be included by supplier. Provision for the third mud pump to be kept in the mud pump console including space for the hand throttle, control cable and socket, PLC Communication cable, indication lamp, meter and on-off selector switch.

It should be possible to run mud pumps up to full speed through MP Console. Operation through MP Console should be possible only if MPC / Driller’s Console switch at Driller Console is in MPC mode.</td>
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<tr>
<td>64</td>
<td><u>4.0 SPARES, TOOLS & TACKLES:</u></td>
<td>Following tools, tackles & spares to be supplied by Bidder; other than specified against any specific clause earlier in this document.</td>
<td></td>
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</tr>
</table>

65	**4.1 TOOLS & TACKLES :**	**TOOLS & TACKLES :** **Qty** | **Description** SURVIVAL KIT CONSISTING OF THE FOLLOWING - 2 | Pyle-National Plug and Receptacle Crimping Tools 1 | Hydraulic Crimping Tool for Generator and DC Motor 300 sq mm cables 1 | Tool Box with Hand Tools applicable to a rig up 1 | Laptop with Windows 10 or later with software for programming the PLC 1 | PLC-SIE, Software for PLC with license 2 | PLC-SIE, Cable/Adptr, USB, PMB 1 | Fluke Multi-meter model 175 1 | Secondary injection test kit for Gen/SCR/Top Drive/Transformer feeder breakers 1 | Jigsaw 1 | 25 Piece Jigsaw Blade Kit 1 | 300 sq mm Cable Cutter 1 | Set of Pyle-National Pin Extraction/Insertion Tool Kit 2 | Taparia Box wrench set 1 | Hand drill machine,800 Watt,Bosch 2 | Anti panic door locks 1 | Megger MIT 300 IR tester ***NOTE**: The laptop will have the PLC program software installed along with the PLC system logics program. Appropriate storage (CD / Flash Media) with the required software (s) also to be supplied loose.All software's supplied shall be original and licensed to OIL India without expiration date. No trial version/evaluation /shareware copy of the software will be accepted.*		

66	4.2 COMMISSIONING AND OTHER RELATED SPARES	The following list of spares to be supplied with the PCR		
67		4.2.1 COMMISSIONING SPARES FOR SCR SYSTEM IN PCR		

Item	Qty	Supplier Part No	Description
1	4		600 A, Fuse, 700V C
2	2		SW-Micro, 250 V, 10A Rated, U/ W000
3	10		Fuse .6A, 500 V c, 10 KIC
4	10		Fuse 2A, 500 V c, 10 KIC
5	10		Fuse 3.5 A, 500 V c, 10 KIC
6	10		Fuse 6A, 500 V c, 10 KIC
7	10		Fuse 10A, 500 V c, 10 KIC
8	10		Fuse 15A, 600 V c, 200 KIC
9	6		Fuse 60A, 1000 V c, KIC
10	3		SCR-2000V, 2293A, 4” Pkg
11	2		RLY-24 VDC, 2A2B0C, A, Fixed
12	2		RLY–120 V, 0A0B3C, 10A, BRKT
13	2		RLY-24 VDC, 0A0B3C, 10A, BRKT
14	4		SW-MICRO, DPDT, 15A, 125 VAC
15	5		LED lamps
16	5		BULB-6.3V, 0.15A, Miniature
17	5		LAMP BULB 18 V
18	2		LAMP-130 VAC/DC, U/W GE C-2000
19	2		LAMP BULB 130 V, 10 W, Clear
20	2		MOV, 750 VRMS, 2600 J, 70 KA, 1880V

Note : Item 1 SCR fuses rating to be as per the system design

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4.2.2 SPARES FOR SCR SYSTEM IN PCR (Please insert supplier part #)

Qty	Supplier Part No	Description
1		Module-AC, For generator panel
1		Module-DC, for SCR panel
2		Diode for passive field supply
2		Thyristor for active field supply
1		Exciter field supply transformer
1 sets		Control transformers (1 each) all type
2		DC Contactors for SCR
1 sets		Relays (1 each type)
2		Switch 3 position for Generator control
1 sets		Indicating meters DB40 (1 each type)
1		Phase rotation relay for generator panel
2		Syncronising Switch
4		600 A, Fuse, 700V
3		SW-Micro, 250 V, 10A Rated, U/ W000
20		Fuse .6A, 500 V c, 10 KIC
20		Fuse 2A, 500 V c, 10 KIC
20		Fuse 3.5 A, 500 V c, 10 KIC
20		Fuse 6A, 500 V c, 10 KIC
20		Fuse 10A, 500 V c, 10 KIC
20		Fuse 15A, 600 V c, 200 KIC
10		Fuse 60A, 1000 V c, KIC
4		SCR-2000V, 2293A, 4” Pkg
2		RLY-120VAC, 4A0B0C, 10A, IEC D
2		RLY-120VAC, 0A0B4C, 1A, Bifur
2		RLY-24VDC, 2A2B0C, 10A, IEC

			4		SW-MICRO, DPDT, 15A, 125 VAC			
			1		BLWR-G/3B, 600V, 3PH, 2. HP, 50 HZ			
			10		LED lamps			
			10		BULB-6.3V, 0.15A, Miniature			
			5		LAMP BULB 18 V			
			5		LAMP-130VAC/DC, U/W GE C-2000			
			5		LAMP BULB 130 V, 10 W, Clear			
			1		MOV, 750 VRMS, 2600 J, 70 KA, 1880V			
			1		PCA PWR LIM CTRL			
			1		PC-DC SLIDE FOR SCR panel			
			1		ASSY-GND Leakage Detector			
			2		PC Auctioneering CKT BD			
			2		PC Generator Exciter BD			
			2		PC Voltage feedback			
			2		PC solid state relay ckt board			
			2		PC Field supply regulator for MP1-2			
			3		CABLE-ASSY, Profibus, 120 mtr.			
			1		1000 Amps, 600 Volts, 3-Pole, manually operated MCCBs used in transformer feeder panel			
			2		CB-1600AF/AT 690VAC, 65KIC, one for Gen & one for SCR panels.			
			1		CB-1000-1200AF/AT 690VAC, 65KIC			
			1		CB-UVR (YU), 24VDC			
			1		CB-Shunt Closing Release			
			1		CB-Charging Motor, 120VDC			
			2 set		PLC Power supply (1 each type)			
			2		PLC Processor card			
			2		PLC interface card			

			2 sets		PLC I/O Cards		
			1 set		10% spare plug and receptacles		
			4		Spare RTD temp scanner for PT-100		
69		**4.2.3 SPARES FOR DRILLER CONSOLE**					

Item	**DESCRIPTION**	Supplier Pt No	**QTY.**
1	Hand Throttle, Potentiometers, RTI limit Pot		1 set
2	SW- Assignment 3 position with contact blocks		2
3	SW – MP on/off 2 position with contact blocks		2
4	SW DW For/Rev 3 position with contact blocks		1
5	PCB – auctioneering circuit board		1
6	Relays (1 each type)		1 set
7	Pushbuttons		1 each
8.	Indication lamps		1 set
9.	Ammeters		1
10.	PLC power supply		2
11	PLC Interface /Communications Module		2
12	PLC Cable		120 m

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<td>70</td>
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4.2.4 SPARES FOR MUD PUMP CONSOLE
<table>
<tr><th>Item</th><th>DESCRIPTION</th><th>Supplier Pt No</th><th>QTY.</th></tr>
<tr><td>1</td><td>Hand Throttle, Potentiometers</td><td></td><td>1 set</td></tr>
<tr><td>2</td><td>SW – MP on/off 2 position with contact blocks</td><td></td><td>1</td></tr>
<tr><td>3</td><td>PCB – auctioneering circuit board</td><td></td><td>1</td></tr>
<tr><td>4.</td><td>Indication lamps</td><td></td><td>1 set</td></tr>
<tr><td>5.</td><td>Ammeters</td><td></td><td>1</td></tr>
<tr><td>6.</td><td>PLC power supply</td><td></td><td>1</td></tr>
<tr><td>7</td><td>PLC Interface /Communications Module</td><td></td><td>1</td></tr>
<tr><td>8</td><td>PLC cable</td><td></td><td>30 m</td></tr>
</table>
Note : The above is the minimum list of spares which is to be provided by the supplier. The above list is only for reference and the supplier shall furnish a detailed list of Commissioning & 2 years OEM spares along with the offer. Manufacturer’s part no. and component manufacturer’s part no. to be furnished by supplier after detailed engineering
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<td>71</td>
<td>4.3 SPARE PLUGS & RECEPTACLES</td>
<td>10% plugs & sockets of each type are to be supplied loose as spares with minimum 1 No of each type of plug & receptacle used in the design. Supplier will furnish list of plugs & sockets used and spare qty. to be supplied after placement of Purchase Order.</td>
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<td>72</td>
<td>5.0 <u>GENERAL POINTS:</u></td>
<td>i)Though a broad outline on the requirement has been made, yet the scope should include anything not mentioned but required for completeness of the system to meet the requirement of oil well deep drilling rig (drilling capacity 6100 meters depth) and make the same suitable for dismantling, transportation and installation very often in rough and tough conditions.</td>
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<td>73</td>
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<td>ii)The system offered should have proven performance record. All relevant safety systems are to be incorporated and safety codes, relevant international codes to be strictly followed. Systems to be designed & manufactured to the latest NEC, IEC, IEEE-45, API 500, and NEMA standards, & should meet all present accepted international standards for the product/application</td>
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</table>

74		**iii)Supplier shall use components/ sub-assemblies only of reputed and proven make and of latest design.**		
75		iv)The system shall be free from any defect arising from faulty material, workmanship or design. Any such defects, including replacement of faulty components, shall be carried out by the manufacturer free of cost during warranty period. **The SUPPLIER shall have the total and final responsibility for the design and performance of all equipment.**		
76		v)All components, modules, subsystems shall be of current generation with latest technology which must be in production and must not face obsolescence in near future. The supplier and the manufacturer in turn shall guarantee that spare parts shall be available for at least fifteen years.A certificate to this effect shall be attached with the bid.		
77		vi)The controls i.e. all electronics including modules and different electronic components, PLC etc. shall have high levels of noise immunity. They shall have high level of EMC and shall be immune from noise generated by future AC Variable Frequency Drive for Top Drive inclusion that will be powered from the 600 VAC Top Drive Feeder in the PCR.		
78		vii)The system including all sub-assemblies and components should be designed to facilitate backward integration of future modules, cards etc without any modification.		
79		viii)Bidder shall have well equipped testing and repair set-up in India, suitable for complete testing and repair of PCRs, including repairs to the skid and housing. Facilities available shall include Welding and painting. The set-up should include both on-site repair, as well as factory repair capability.		
		ix)The DC-PCR shall be brand new, unused, manufactured especially for Oil India, and free from any manufacturing defect. This shall be categorically stated by the bidders in their quotations.		
		x)Offers shall be complete in all respects and all the items/equipment as specified in the tender must be included in the package. Offers deemed to be incomplete shall be rejected (Bidders may quote additional items / equipment or accessories, other than Handling Equipment, not covered in this enquiry, if felt necessary for the completeness and efficient operation of the DC-PCR).		
		xi)The bidder shall fill up the bidder's response sheet with comments at the time of submission of bid.		

80	**6.0 PRE ENGINEERING INFORMATION:**	**After placement of order, supplier can ask for pre-engineering information, if required, to start the system engineering. Oil India shall provide all necessary data required.**		
81	**7.0 COMMISSIONING**	**a. GENERAL** Commissioning is an essential part of this Tender, and bids that do not quote for commissioning shall be treated as incomplete bids. Bidder has to successfully commission the DC-PCR at location in Assam, India, to the complete satisfaction of Oil India. Commissioning charges to be quoted separately on lumpsum basis which shall be considered for evaluation of the offers. These charges should include amongst others to and fro fares, boarding/lodging, local transport at Duliajan and other expenses of supplier's commissioning personnel during their stay at Duliajan, Assam(India). All income, GST, Corporate Taxes etc. towards the services provided under installation / commissioning /training shall be borne by the supplier and will be deducted at source at the time of releasing the payment. Bidder should also confirm about providing all these services in the Technical Bid. Commissioning of the DC-PCR may require more than one visit, depending on availability of drilling rig and other factors. Charges for commissioning shall be paid as one lump-sum, and not per visit. The time available to commission the PCR shall be two weeks. However, Bidder should note that the PCR cannot be commissioned at one single visit. Bidder should plan for a minimum of two visits to complete the commissioning of the PCR. Successful bidder shall submit a tentative plan for commissioning the DC-PCR, for approval of Oil India. The completed DC-PCR shall be connected to existing equipment (AC-PCR, Electrical motors, devices, cables etc.) in a drilling rig, checked for integrity of connections and acceptable levels of electrical insulation resistance, and powered up (phased up). All devices and interlocks shall be individually tested, and should work exactly as intended. The entire drilling rig, with the DC-PCR fully integrated shall be tested, and should work exactly as intended. Any problems, design inadequacies, material		

		failure, device malfunction etc. shall be addressed / replaced by the successful bidder. Adequate spares for commissioning activity should be arranged for by the successful bidder. All personnel, statutory permissions (if required), equipment, tools, tackles and instruments required to commission the DC-PCR at site shall be arranged by the successful bidder. Oil India shall provide 415 VAC, 3 phase power, and transportation to and from Duliajan to drill-site only.		
82		**b. RECEIPT OF MATERIALS DESPATCHED FROM MANUFACTURER'S WORKS** The supplier should physically verify upon receipt, all equipment and materials (including commissioning spares etc.) after delivery at OIL's premises. The supplier should carry out inspection of all the supplied items to ascertain and certify that there all dispatched items have reached site, there is no transit damage and items are complete in all respects and ready for installation. In case of any discrepancy, supplier shall take necessary action for immediate replacement/ replenishment of the same before installation.		
83		**c. A GUIDE FOR INSTALLATION AND COMMISSIONING ACTIVITIES EXPECTED:** *i. Installation, wiring and laying out of equipment:* On arrival of equipment and materials (commissioning spares etc.) at OIL's premises the supplier should carry out inspection of the supplied items to ascertain and certify that there is no transit damage and items are complete in all respect and ready for installation. In case of any discrepancy, supplier shall take necessary action for immediate replacement/ replenishment of the same before installation. After receipt, the equipment shall be installed at site. This will include wiring/ cabling, fitting of plugs and sockets and any other activity required to make the equipment ready for commissioning. Any third party devices (if applicable) shall be installed inside the PCR at this stage. *ii. Initial commissioning after start up connection:* This activity will cover electrical insulation checks, wiring checks, phasing up (powering up) of individual equipment and the system as a whole. After start up connection and powering up, the complete system shall be tested at no load and minimum/ low load at OIL's well site. All equipment as well as the whole system shall work exactly as		

		intended. Any modification/ re-wiring/ repair shall be carried out at this stage. *iii. Final commissioning:* The PCR shall be integrated with the other equipment of the Drilling Rig, and operated in conjunction with these pieces of equipment, as a complete system. Any problems, abnormalities, anomalies and defects noticed/ logged during this stage (operation at full/rated load) shall be rectified by the supplier. This will cover setting/ adjustment/ calibration of limits in the control system, drives etc. All equipment as well as the whole system shall work exactly as intended.		
84		**d. PRECAUTIONS TO BE OBSERVED:** Oil India's drilling sites have an elaborate system of hazardous areas / zones, where restrictions on electrical equipment operation are enforced. All personnel coming for any activity inside the drilling site is advised to familiarize themselves with such demarcations before commencing any work.		
85	**8.0 LIST OF ANNEXURE (S)**	a. Annexure – 1: 20 pin receptacle pin connections for Alternators. b. Annexure – 2: 20 pin receptacle pin connections for DC Motors. c. Annexure – 3: Layout showing Placement of DC-PCR (Information to bidder)		
86	**9.0 OTHER ISSUES**	**a. EARTHING OF THE PCR SHELL** Six studs/bolts of M8 size shall be provided on each side of the DC-PCR for grounding.		
87		**b. STAGE & PRE-DESPATCH INSPECTION** Oil India's Engineers shall inspect the DC-PCR Shell at various stages of manufacture to ensure job quality and adherence to specifications. A final Pre-despatch inspection shall be conducted by OIL or its representative at manufacturer's works. The DC-PCR shall be dispatched from works only after receipt of such instruction from Oil India. Supplier shall give call for such Pre-despatch inspection(s) at least 45 days in advance, to enable Oil India to prepare for inspection.		

		Bidders are also advised to include pre-despatch inspection costs (if any) in the bid . All to & fro travel expenses, boarding , lodging expenses of OIL representative shall be borne by OIL.		
88		**c. DETAILED ENGINEERING STAGE** This is the period between award of Purchase order, and the start of manufacture is referred to as the "Detailed Engineering Stage". Successful bidder shall provide OIL with all required drawings, and get them approved before manufacture. All engineering details not covered in these specifications, or specifications requiring modifications, shall be worked out mutually during this "pre-manufacturing" stage.		
89		**d. TESTING AT MANUFACTURER'S WORKS** Successful Bidder shall have to test the PCR at Manufacturer's works, and provide the following certificates to Oil India before despatch: ➢ Factory Acceptance Test Certificate ➢ Manufacturer's Quality Assurance Plan and Certificate of adherence to this plan ➢ Welding NDT Report for all welds at important points of the DC-PCR body Bidder to take note that the despatch clearance would not be given if the above certificates are not produced duly signed and authenticated.		
90		**e. DESPATCH OF DC-PCRs TO OIL INDIA DESIGNATED SITE AT ASSAM** After completion of manufacture and testing at Manufacturer's works, supplier shall have to arrange for despatch of the DC-PCR to site at Duliajan. The exact site will be communicated by Oil India at the time of despatch. The entire PCR shall be adequately packed and sealed to avoid ingress of dust and water during travel, as well as to afford mechanical protection to the PCR. All arrangements in this regard will have to be borne by supplier. Bidders shall confirm categorically that Installation & Commissioning of the Rig Package with all accessories would be carried out by their competent personnel at OIL's designated drill site, in Duliajan, ASSAM, INDIA. However, the basic facilities required for installation & commissioning such as to & fro transportation to site from Duliajan, Crane service, electric power (3 phase, 415 VAC), water supply, pressurized air etc. shall be provided by OIL. All other facilities are to be arranged by the supplier. Bidders, quoting for any bought out / third party item(s) should undertake & comply with Guarantee / Warranty clause indicated elsewhere in this tender.		

91			**f. MARKINGS ON THE BODY OF THE DC-PCR** The following shall be done after external painting of the PCR is complete. The Two ends of the PCR shall be labeled "Draw works End" and "Compressor End", as appropriate. The sides will be painted with Oil India's logo (to be provided), and the Words "Oil India Limited", "A Government of India Undertaking", "DC-PCR", "Rig #S2 ", the Purchase Order Number, Dimensions and weight of the DC-PCR, Manufacturer's Name and any Lifting Instructions.		
92			**g. SAFETY CONSIDERATIONS INSIDE THE PCR** Appropriate warning labels and safety provisions shall be made in the PCR to caution the operating and maintenance personnel against potential hazards and to prevent direct human contact to any live part or rotating part during operation.		
93	**10.0 WARRANTEE / GUARANTEE**		Bidder should confirm in their bid that they will provide warranty / guarantee for a period of 1 year (12 months) from date of successful commissioning of the DC-PCR at site. This guarantee shall cover all items of the PCR package, including (but not limited to) the skid, housing, all the internal components and any spares supplied. Any repairs / replacements required during this Warrantee period shall be carried out by the successful bidder, on site, at no cost to Oil India. The typical response time shall be 48 hours (at site) after a repair call is given by Oil India. Repairs / replacements shall normally be carried out at site by the supplier. However, in serious problems the DC-PCRs may need to be returned to factory for major repairs. If the DC-PCR needs to be returned to the factory for repairs due to manufacturing or design problems, all transportation and repair charges shall be to supplier's account.		
94	**11.0 DRAWINGS AND APPROVALS**		**a. GENERAL** All information, operating and warning labels and O&M Manuals should be in English only. The bidder should provide at least one set of parts list, operations manual & maintenance manual covering all the items & its accessories including any special / alignment tools for the same along with the technical offer. Technical details of the electrical system with dimensional drawing (including Layout, arrangement and circuit diagrams) must also be forwarded along with the technical offer. Successful Bidder shall provide engineering drawings and BOM for approval of Oil India before manufacturing. All engineering details not covered in these specifications shall be worked out before manufacture. Any corrections / additions / modifications to drawings and BOM requested by Oil India shall be		

		carried out by successful bidder without any cost to Oil India. Manufacture shall start only after written approval from Oil India on all issues. See sub-section "d" below for details about drawing submission schedule.		
95		**b. PARTS CATALOGUE, OPERATION / INSTRUCTION MANUAL & DRAWING, TECHNICAL INFORMATION & BULLETIN:** After successful commissioning of the DC-PCR, the successful bidder shall provide Oil India with five sets of O&M manuals, BOM, and "as-built" drawings, of the DC-PCR. Five of these sets shall be in printed form, and two in electronic form (flash memory format). Operation & Maintenance manual should cover the following: ➢ Layout drawing of all components on the unit with details of load distribution ➢ Literature of all third party devices installed on the DC-PCR ➢ Safety related Information		
96		**c. CONFIDENTIALITY** Any third party details required and obtained by the successful bidder through Oil India, to complete the DC-PCR design shall be kept confidential. All such material shall be returned to Oil India after completion of related job. Any materials or information about Oil India, obtained by the successful bidder during execution of this job shall be kept confidential, returned to Oil India, or properly disposed of.		
97		**d. SCHEDULE OF SUBMISSION OF DRAWINGS/ DOCUMENTS** Successful Bidder shall submit the following Drawings/ documents at the stages indicated therein: A. The following Drawings shall be submitted with the Bid: i) Indicative single line power flow diagram of the DC-PCR, showing all voltage levels, current ratings & short circuit making/ breaking capacities of breakers/ isolators, bus ampere rating (taking into account all generators / SCRs fully loaded) etc. ii) Details of the Short circuit calculation of the complete electrical system iii) Indicative Layout diagram (Plan), showing all electrical panels of the PCR, Socket boards, etc. iv) Indicative PCR dimensional drawings, including details of rain protection for cable & plug sockets etc. v) Spare parts/ Spare equipment / Consumables list and quotations of spares		

<table>
<tr><td></td><td></td><td>B. The following Drawings shall be submitted after successful commissioning of the PCR:
i) Equipment literature/ Third party (quality control) inspection report
ii) "As-built" drawings,
iii) Operation and workshop manuals,
Bill of Materials (BOM) and any other relevant documents</td><td></td><td></td></tr>
<tr><td>98</td><td>12.0 MAKES OF IMPORTANT EQUIPMENT</td><td>
<table>
<tr><th>Sl #</th><th>Item Description</th><th>Design / Make</th></tr>
<tr><td>1</td><td>Generator Control</td><td>HG/ Ross Hill Design (AC-Module based)</td></tr>
<tr><td>2</td><td>Generator Exciter PCB</td><td>HG / Ross Hill Design</td></tr>
<tr><td></td><td>SCR Control</td><td>HG / Ross Hill design (DC-Module based)</td></tr>
<tr><td>3</td><td>DC Motor Field Control</td><td>HG / Ross Hill design (Diode & Thyristor)</td></tr>
<tr><td>4</td><td>Synchronizing Relay</td><td>Basler Veri-Synch / Equivalent</td></tr>
<tr><td>5</td><td>Air Circuit Breakers</td><td>ABB / Siemens / Merlin-Gerin</td></tr>
<tr><td>6</td><td>DC Contactors</td><td>Hubbel / NOV / Siemens /Cutler Hammer</td></tr>
<tr><td>7</td><td>Armature Reversing Contactor</td><td>Hubbel / NOV / Cutler Hammer</td></tr>
<tr><td>8</td><td>External Connection Plug-Sockets (Single pole / 5 Pin / 20 Pin)</td><td>Pyle National / BCH / Appleton / Crouse-Hinds</td></tr>
<tr><td>9</td><td>PLC</td><td>Siemens S7 / Rockwell</td></tr>
<tr><td>10</td><td>Touch Screen</td><td>Siemens / Wonderware</td></tr>
<tr><td>11</td><td>Air Conditioner</td><td>Trane / Hitachi / Carrier / Daikin</td></tr>
<tr><td>12</td><td>Generator RTD Temperature Scanner</td><td>Omega / Libratherm (10 Ohm Cu / 100 Ohm Pt)</td></tr>
</table>
i) The Following shall be preferred makes / Design for DC-PCR Equipment:
</td><td></td><td></td></tr>
</table>

99		ii) Existing Equipment at Drilling Rigs of Oil India (Provided as Information to Bidder) **Sl #** / **Item Description** / **Make / Model** 1 / Generator / KATO / BHEL 1215/1430 kVA, 600 VAC, 1000 RPM, 50 Hz 2 / DC Motor / BHEL 750 VDC, 1000 HP, separately excited, shunt wound, with 55-60ADC field winding current, 3 / Power Transformers / 2 x 600 kVA, 600/415 VAC, 3 Phase, 50 Hz. Neutral on secondary (415 VAC side) grounded through NGR, hence neutral will not be available. 4 / Isolation Transformers / 2 x 30 kVA/1 X100 kVA, 415 VAC/415 VAC, Mainly for Rig accommodation bunk-houses' facilities; and areas lighting.		

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TECHNICAL BRC Clauses:

Sl No	Clause No of Tender Document/BEC/BRC, Technical specification/Scope of work, Special Note.	Description	Bidders remarks Complied/Not Complied/Deviation	Bidder to indicate relevant page no of their bid to support the remarks/compliance
1	1.0	Bidder shall be a manufacturer of PCRs (AC-PCR / DC-PCR / VFD PCR etc.) used in Drilling Rigs of minimum capacity 1400HP and above, and supplied during last 05 (Five) years to be reckoned from the date of Bid Closing Date to PSU / Central Govt. / State Govt./Public Limited Companies operating in India. Necessary evidence in the form of Purchase Orders/Invoices/Bill of Lading/acceptance / performance certificates shall be submitted along with the offer. Bids from parties other than manufacturers shall not be entertained.		
2	2.0	Bidder shall have adequate manufacturing facility for manufacturing and assembly of PCRs (AC-PCR / DC-PCR / VFD PCR) of his own. The bidder shall supply proof of this facility in his bid. This is however exempt for bidders that have previously supplied PCRs (AC-PCR / DC-PCR / VFD PCR) to Oil India. Such exempted bidders shall provide a list of Purchase Orders from Oil India Limited, executed successfully. Acceptable proof in this regard shall be Quality certifications for the facility issued by independent agencies/ Invoices for PCRs shipped from this facility ,Valid Certificate of Incorporation of the manufacturing facility / Valid Uddyog Aadhar number certificate/ Government approval for this facility.		
3	3.0	Bidder should have manufactured and supplied at least 1 PCR during last 05 (Five) years to be reckoned from the date of Bid Closing Date in the manufacturing facility stated in 2.0 above, and these PCRs should have been supplied for 50 Hz systems (as in use in Oil India's Drilling Rigs) as on Bid Closing Date.		

		Copies of Purchase Orders and any of the following documents should be enclosed with the bid, as proof of supply of PCR: Performance Certificates/Invoice/Bill of Lading. This is however exempt for bidders that have previously supplied PCRs (AC-PCRs, DC-PCRs or VFD PCR's used in Drilling Rigs) to Oil India Limited. Such exempted bidders shall provide a list of Purchase Orders from Oil India Limited, executed successfully.		
4	4.0	Delivery required against this tender is maximum 14 (Fourteen) months from the date of opening of LC in case order is placed on the foreign supplier OR within 14 (Fourteen) months from the date of receipt of order in case order is placed on indigenous supplier. Date of clean Bill of Lading (B/L in case of foreign supplier) or Consignment Note date (C/Note date in case of indigenous supplier) shall be considered as delivery date. Bidder must comply the above schedule and confirm in their Techno-Commercial bid. Bids not meeting time schedule as mentioned above shall be summarily rejected.		

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ANNEXURE – IV

CERTIFICATE OF ANNUAL TURNOVER & NET WORTH

TO BE ISSUED BY PRACTISING **CHARTARD ACCOUNTANTS' FIRM** ON THEIR LETTER HEAD

TO WHOM IT MAY CONCERN

This is to certify that the following financial positions extracted from the audited financial statements of M/s.....(Name of the bidder) for the last three (3) completed accounting years upto..... **(as the case may be)** are correct

YEAR	TURN OVER In INR (Rs.) Crores/ US $ Million) *	NET WORTH In INR (Rs.) Crores / US $ Million) *

*Rate of conversion (if used any): USD 1.00 = INR .....

Place:
Date:

Seal

Membership No:
Registration Code:

Signature

***Applicable only for GLOBAL tenders**