Annexure-I

OIL INDIA LIMITED
(A Government of India Enterprise)
P.O. Duliajan-786602, Assam, India
E-mail: material@oilindia.in

INVITATION FOR BID
LOCAL COMPETITIVE BID

OIL INDIA LIMITED invites Local Competitive Bid (LCB) through its e-procurement portal https://etender.srm.oilindia.in/irj/portal for the following items:

Tender No	Bid Closing/ Opening Date	Item & Qty
SDI7982P16 DT: 28.07.2015	24.09.2015	PMCC PANEL -01 NOS
SDI7983P16 DT: 28.07.2015	24.09.2015	LIQUID FLOW IMPROVER – 10000 KG
SDI7985P16 DT: 28.07.2015	24.09.2015	CEMENTING CREW CABIN – 05 NOS
SSI7956P16 DT:27.07.2015	24.09.2015	CAUSTIC SODA-108MT
SSI7957P16 DT:27.07.2015	01.10.2015	M.S.ANGLE-40MT
SSI7958P16 DT:27.07.2015	01.10.2015	TMT STEEL BAR-80MT

Tender fee (Non-refundable): Rs 1,000.00; Bid Closing/Opening Time: **(11 Hrs.) IST/(14 Hrs.) IST**; Period of sale of documents **till One week prior to bid closing date**. The complete bid documents and details for purchasing bid documents, participation in E-tenders are available on OIL's e-procurement portal https://etender.srm.oilindia.in/irj/portal as well as OIL's website www.oil-india.com.

NOTE: All addenda, Corrigenda, time extension etc. to the tenders will be hosted on above website and e- portal only and no separate notification shall be issued in the press. Bidders should regularly visit above website and e-portal to keep themselves updated.

OIL INDIA LIMITED
(A Government of India Enterprises)
PO : Duliajan – 786602
Assam (India)

TELEPHONE NO: (91-374) 2808719
FAX NO: (91-374) 2800533
Email: bivashdas@oilindia.in ; erp_mm@oilindia.in

FORWARDING LETTER

Tender No. : **SDI7982P16 DT; 28.07.2015**

Tender Fee : **Rs 1,000.00**

Bid Security Amount : **Rs 49,400.00**

Bidding Type : **SINGLE STAGE COMPOSITE BID SYSTEM**

Bid Closing on : **As mentioned in the e-portal**

Bid Opening on : **-do-**

Performance Security : **Applicable**

Integrity Pact : **Not Applicable**

OIL invites Bids for **Supply, Installation and Commisioning of 01 Nos Electrical Panel** through its e-Procurement site under **SINGLE STAGE COMPOSITE BID SYSTEM**. The bidding documents and other terms and conditions are available at Booklet No. MM/LOCAL/E-01/2005 for E-Procurement LCB Tenders. The prescribed Bid Forms for submission of bids are available in the Technical RFx -> External Area - > Tender Documents

The general details of tender can be viewed by opening the RFx [Tender] under RFx and Auctions.. The details of items tendered can be found in the Item Data and details uploaded under Technical RFX.

The tender will be governed by:

a) "General Terms & Conditions" for e-Procurement as per Booklet No. MM/LOCAL/E-01/2005 for E-Procurement LCB Tenders.
b) Technical specifications and Quantity as per **Annexure – 1A**.
c) The prescribed Bid Forms for submission of bids are available in the Technical RFx -> External Area - > Tender Documents.
d) In the event of receipt of only a single offer against the tender within B.C. date, OIL reserves the right to extend the B.C. date as deemed fit by the Company. During the extended period, the bidders who have already submitted the bids on or before the original B.C. date, shall not be permitted to revise their quotation.
e) All corrigenda, addenda, amendments, time extension, clarifications etc. To the tender will be hoisted on OIL's website (www.oil-india.com) and in the e-portal (https://etenders.srm.oilindia.in/irj/portal) only and no separate notification shall be issued in the press. Prospective bidders are requested to regularly visit the website and e-portal to keep themselves updated.
f) Any sum of money due and payable to the contractor (including Security Deposit refundable to them) under this or any other contract may be appropriated by Oil India Limited and set-off against any claim of Oil India Limited (or such other person or persons

contracting through Oil India Limited) for payment of sum of money arising out of this contract or under any other contract made by the contractor with Oil India Limited (or such other person or persons contracting through Oil India Limited).

g) Bidder are advised to fill up the Technical bid check list (**Annexure EEE**) and Response sheet (**Annexure FFF**) given in MS excel format in Technical RFx -> External Area - > Tender Documents. The above filled up document to be uploaded in the Technical RFX Response.

Special Note:

1.0 General Qualification Criteria:

In addition to the general BRC/BEC, following criteria on Bidders' Experience and their financial capabilities shall be considered **(Documentary evidence to be provided along with the bid in Technical RFx -> External Area - > Tender Documents)** as on the Bid Closing Date:

Criteria	Complied / Not Complied. Documentary evidence submitted / not submitted
a) Annual financial turnover of the firm in any of the last 3 financial years or current financial year should not be less than Rs 49.38 Lakhs.	

Note: For Annual financial turnover enclose the audited Annual Reports or balance sheet certified by a chartered accountant.

2.0 Application showing full address/email address with Tender Fee (Non-refundable) of Rs. 1,000.00 in favour of M/s Oil India Limited and payable at Duliajan is to be sent to Head-Materials, Oil India Limited, P.O. Duliajan, Assam-786602. Application shall be accepted only upto one week prior to Bid Closing date (or as amended in e-portal). The envelope containing the application for participation should clearly indicate "REQUEST FOR ISSUE OF USER ID AND PASSWORD FOR E TENDER NO …" for easy identification and timely issue of user ID and password. On receipt of requisite tender fee, USER_ID and initial PASSWORD will be communicated to the bidder (through e-mail) and will be allowed to participate in the tender through OIL's e- Procurement portal. No physical tender documents will be provided. Details of NIT can be viewed using "Guest Login" provided in the e-Procurement portal. The link to e-Procurement portal has been also provided through OIL's web site www.oil-india.com.

NOTE:

a) Tender Fee may also be paid online upto one week prior to the bid closing date (or as amended in e-portal).

b) PSUs and SSI units are provided tender documents Free of Cost (as per govt guidelines), however they have to apply to OIL's designated office to issue the tender documents before the last date of sale of tender document mentioned in the tender.

3.0 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 scribed with **Tender no.** and **Due date** to **Head**

Materials, Materials Department, Oil India Limited, Duliajan - 786602, Assam on or before the Bid Closing Date and Time mentioned in the Tender.

a) **Original Bid Security**
b) **Detailed Catalogue (if any)**
c) **Any other document required to be submitted in original as per tender requirement**

All documents submitted in physical form should be signed on all pages by the authorised signatory of the bidder and to be submitted in triplicate.

4.0 Benefits to Micro & Small Enterprises (MSEs) as per prevailing Govt guidelines as applicable on B.C date shall be given. MSEs who are interested in availing the benefits will upload with their offer proof of their being MSE registered for the item tendered. The MSE are also required to upload scanned copies of relevant documents indicating details of registration alongwith validity, name of the registering organization and details of the item, ownership etc,. failing which, their offer may not be liable for consideration of benefits to MSEs.

5.0 Bidders are requested to examine all instructions, forms, terms and specifications in the bid. Failure to furnish all information required as per the NIT 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.

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 Bid must be submitted electronically only through OIL's e-procurement portal. Bid submitted in any other form will be rejected.

8.0 The tender shall be governed by the Bid Rejection & Bid Evaluation Criteria given in enclosed **Annexure-CCC**. However, if any of the Clauses of the Bid Rejection Criteria / Bid Evaluation Criteria (as per **Annexure-CCC**) contradict the Clauses of the tender and / or "General Terms & Conditions" as per Booklet No. MM/LOCAL/E-01/2005 for E-procurement (LCB Tenders) elsewhere, those in the BEC / BRC shall prevail.

9.0 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 the company, failing which the offer will be summarily rejected.

10.0 Please do refer the User Manual provided on the portal on the procedure How to create Response for submitting offer.

NOTE:

Bidders should submit their bids (preferably in tabular form) explicitly mentioning compliance / non compliance to all the NIT terms and conditions of NIT.

Yours Faithfully

Sd-
(R BARMAN)
SR. MANAGER MATERIALS (IP)
FOR HEAD-MATERIALS

Annexure - CCC

Tender No & Date: SDI7982P16 DT; 28.07.2015

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

The following BRC/BEC will govern the evaluation of the bids received against this tender. Bids that do not comply with stipulated BRC/BEC in full will be treated as non responsive and such bids shall prima-facie be rejected. Bid evaluation will be done only for those bids that pass through the "Bid Rejection Criteria" as stipulated in this document.

Other terms and conditions of the enquiry shall be as per General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement LCB Tenders. However, if any of the Clauses of the Bid Rejection Criteria / Bid Evaluation Criteria (BRC / BEC) contradict the Clauses of the tender or MM/LOCAL/E-01/2005 elsewhere, those in the BRC / BEC shall prevail.

Criteria	Complied / Not Complied. (Remarks if any)
1.0 BID REJECTION CRITERIA (BRC): **A) TECHNICAL:** The bid shall conform generally to the terms and conditions given in this document. Notwithstanding the general conformity of the bids to the stipulated specifications, the following requirements will have to be particularly met by the Bidders without which the same will be considered as non-responsive and rejected. **B) COMMERCIAL:** **i).** Validity of the bid shall be minimum 120 days from the Bid Closing Date. **ii).** Bid security: The bid must be accompanied by Bid Security of **Rs 49,400** in OIL's prescribed format as Bank Guarantee or a Bank Draft/Cashier cheque in favour of OIL. The Bid Security may be submitted manually in sealed envelope superscribed with Tender no. and Bid Closing date to Head Materials, Materials Department, Oil India Limited, Duliajan- 786602, Assam on or before the Bid Closing Date and Time mentioned in the Tender. **The Bank Guarantee towards Bid Security shall be valid for 10 months from Bid closing date. (i.e. upto 24.07.2016).** **Bid Security may also be paid online on or before the Bid Closing Date and Time mentioned in the Tender.** **If bid security in ORIGINAL of above mentioned Amount and Validity is not received or paid online within bid closing date and time, the bid submitted through electronic form will be rejected without any further consideration.**	

For exemption for submission of Bid Security, please refer Clause No. 8.8 of General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement LCB Tenders.

The format of Bank Guarantee towards Bid Security (Annexure – VII) has been amended to Annexure – VII (Revised) and bidders should submit Bank Guarantee towards Bid Security as per Annexure – VII (Revised) only.

In case of extension of Bid Closing date against the tender where a bidder has already submitted his bid with requisite bid security validity within the original B.C. Date, such bidders will extend validity of bid security covering the extended period of the bid closing date.

iii). Performance Security:
Successful bidder will be required to furnish a Performance Security **@10% of the order value.** For exemption for submission of Performance Security, please refer Clause No. 9.12 of General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement LCB Tenders. **The** Performance Security **must be valid for 12 months from the date of commissioning or 18 months from the date of despatch whichever concludes earlier. Bidder must confirm the same in their bid. Offers not complying with this clause will be rejected.**

The validity requirement of Performance Security is assuming despatch within stipulated delivery period and confirmation to all terms and conditions of order. In case of any delay in despatch or non-confirmation to all terms and conditions of order, validity of the Performance Security is to be extended suitably as advised by OIL.

For exemption for submission of Performance Security, please refer Clause No. 9.12 of General Terms and Conditions vide MM/LOCAL/E-01/2005 for E-Procurement LCB Tenders.

iv). *The Bank Guarantee should be allowed to be encashed at all branches within India*.

v). 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.

vi). Bids received after the bid closing date and time will be rejected. Similarly, modifications to bids received after the bid closing date & time will not be considered.

vii). All the Bids must be Digitally Signed using "Class 3" digital certificate with Organisation's name *(e-commerce application)* 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

with Organisation's Name" digital certificate, will be rejected.

viii). Price should be maintained in the "online price schedule" only. The price submitted other than the "online price schedule" shall not be considered.

2.0 BID EVALUATION CRITERIA (BEC)

The bids conforming to the terms and conditions stipulated in the tender and considered to be responsive after subjecting to the Bid Rejection Criteria as well as verification of original of any or all documents/ documentary evidences pertaining to BRC, will be considered for further evaluation as per the Bid Evaluation Criteria given below.

A) TECHNICAL:

1. The manufactured product should be strictly as per OIL's tender specification.

B) COMMERCIAL:

i). To evaluate the inter-se-ranking of the offers, Assam Entry Tax on purchase value will be loaded as per prevailing Govt. of Assam guidelines as applicable on bid closing date. Bidders may check this with the appropriate authority while submitting their offer.

ii). 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 the company, failing which the offer will be summarily rejected.

NOTE:

Bidders should submit their bids (preferably in tabular form) explicitly mentioning compliance / non compliance to all the NIT terms and conditions of NIT.

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TECHNICAL SPECIFICATIONS WITH QUANTITY

Tender No & Date: SDI7982P16 DT: 28.07.2015

	Complied / Not Complied. (Remarks if any)
ITEM NO.10 **SUPPLY OF PMCC PANEL – QTY= 01 NOS** The following items are to be supplied, installed and commissioned by the bidder: Item # 1- PMCC Panel, 01 no. Item # 2- Motor Starter (SDS) Panel, 04 nos. Item # 3- NGR with NGR Monitoring Panel, 02 nos. Item # 4- Lighting Distribution board- 01 no. The above items as described below shall be suitable for the following conditions: 1) System rated voltage: 415 V, 50 Hz, Three phase, Three wire 2) Max. ambient temp.: 40 deg C 3) Min. ambient temp.: 5 deg C 4) Maximum humidity: 98% 5) Altitude: 100 m above MSL **Item # 1: PMCC Panel (01 no.)** A. General Description of Panel: a) Panel shall be single front, extensible type, sheet steel clad, self-supporting and floor mounted with integral base channel, cubicle type, indoor, dust and vermin protected. It shall contain copper bus bars (both horizontal main and vertical feeder) and individual motor starter/feeder panels suitable for operation from front side. Frames shall be made from suitably sized rigid framework of steel formed angles and channels and 2 mm thick CRCA sheet steel. Cubicles shall have individual front doors with sturdy hinges and fitted with special non-deteriorating neoprene gasket. Lifting lugs shall be provided on the top of panel. b) Panel including busbar shall be suitable for future horizontal expansion on both sides. Busbars and cubicles/side walls of the panel shall be manufactured accordingly. c) Panel shall have horizontal main busbars (of ratings as given in the Annexure- Panel Feeder Lists) with alternate vertical busbar and cable alleys for proper distribution of panels. d) A 50 x 6mm GI strip should be provided on the backside of the panel with adequate holes (13mm dia each) with nuts, bolts and washers for making earth connections for all panels and cables. Length of GI strip shall be same as panel length. Zinc plated and passivated double earthing studs with nuts, bolts and washers shall be provided on the earthing strips. e) The PMCC panel shall be thoroughly cleaned and chemically pre-treated for rust/grease removal and phosphate coating in a minimum seven tank chemical treatment process. After chemical treatment, the panel shall be powder coated/polished with epoxy resin based powder and stoved in a stoving oven. Coating (dry film) thickness shall be 50 micron minimum as per IS: 13871-2006. Finish shall be glossy. f) Colour of the PMCC panel shall be light grey to IS: 5 of 2007.	

g) The complete PMCC panel shall be based on a 75x40x6 mm channel with suitable grouting arrangement.
h) Danger plates (415 VAC) shall be fixed on both front and rear of panel including the busbar chambers.
i) Panel and its components shall be conforming to IS: 8623, 8828, 13947 and 12640 & IEC: 60439-1. Protection shall be as per IP-54. Ambient-40°C (Max)/ 5°C (Min), Humidity-98% (Max).
j) All components used must be suitable for the environment as mentioned. All hardware should be of high tensile steel & galvanised/ Zinc passivated. Size of spring washers & flat washers should be as per relevant IS for individual bolt.

Panel can also be of modular design, with plug-in type switchgear. In case of modular panels, the matching parts (male/female) in both power and control circuit shall be of high accuracy and quality for perfect insertion. The withdrawable switchgear like MCCBs must be designed for easy insertion and withdrawal. Component layout shall be designed for maximum heat dissipation. Cable alleys shall be provided for incoming and outgoing cables with labeled terminal blocks and fixing arrangement of cables.

Limiting dimensions of the PMCC panel are 4000 mm (width) x 700 mm (depth/thickness) x 2300 mm (height). Minimum operating height shall be 300 mm. However, minor deviation regarding size can be accepted after discussion with OIL.

B. Detail Description of Panel

a) Incomers:

There will be 2 (two) incomers of 400 Amps, 415V (Ue), 690V (Ui), 36kA or above breaking capacity rated three pole fixed/plug-in type moulded case circuit breaker, (electronic/microprocessor controlled) with adjustable settings [long delay (0.4-1.0 In)/short delay (1.5-10 long delay setting)/ground fault (0.1-1.0 In) with individual time settings] with separate earth leakage module. Earth leakage module shall have range of 0.03-3.0 Amps and 0-3 seconds, both current and time in adjustable steps. The earth leakage protective device may be either an in-built earth leakage trip module (in the MCCB), or a CBCT + EL module combination (for MCCBs) or a separate, but MCCB mountable EL module. The MCCBs shall conform to IEC60947-2/IS 13947-2, tropicalized to Class-II (high humidity). Make: Schneider/ Legrand/ Siemens/ABB /L & T/Indo-Asian/Prok DVs. MCCB, CBCT & ELR shall be of same make for technical compatibility..
Ratings of the incomer panel MCCBs are as given in the Annexure- Panel Feeder Lists.

All incoming and outgoing terminals of MCCB shall be fitted with spreader links supplied by MCCB manufacturer or brought out phase links of copper in rectangular sections with hole. Zinc passivated nut bolts with flat and spring washers for connection shall be provided for cable termination (LT PVCA copper cable for incoming supply for each incomer, depending on incomer current rating as per Annexure-Panel Feeder List). The links shall be supported on non-hygroscopic insulating bars of FRP/DMC based materials and shall be of suitable size for cable termination. The vertical distance between the centre of connection hole in the links for cable connection and the bottom gland plate shall be minimum 450 mm. Detachable gland plate shall be provided which shall be suitable for fixing two/three nos. of cable glands of the size mentioned.

Metering/ Instrumentation for the Incomer (two sets, one set for each incomer):
1) 01 no.- Digital multifunction meter indicating Voltage, Current, Frequency, Power factor,

Power and Energy with RS-485 capability; make- Swift-Encore/Siemens/HPL-Socomec/Merlin Gerin (Schneider). The multi-function meter shall also have function for maximum demand (maximum demand indicator).
2) 03 nos.- Current transformers, wire wound, resin cast/Tape insulated or Nylon Insulation casing type, 600/5, 15 VA, Class 1 to IS: 2705; make- AE/Kappa/Siemens
3) 08 nos.- LED indication lamps for indication of 'Supply ON' (for R/Y/B phases), 'CB Off/CB On/Trip-OC/Trip-SC/Trip-EF'; make- Teknik/Siemens/Schneider/ABB
4) As required- MCBs ('C' curve) for control circuit and instrument circuit protection; make--Schneider/Legrand/Indo-Asian

b) Busbars and bus chamber:

Bus chamber shall be steel clad having front and rear bolted covers. The busbars shall consist of 1 set of hard drawn, high conductivity, three phase, three wire, electrolytic grade, virgin copper bars of purity 99.99% or better, rated minimum 800 Amps, supported at sufficient intervals on non-hygroscopic, non-inflammable glass reinforced plastic (GRP)/sheet moulding compound (SMC) supports. Busbars shall be rated to withstand short circuit fault currents of 50 KA for 1 second. The busbar individual phases shall be colour coded for easy identification. Main busbars shall be full length of the panel. Vertical bus bars for feeding individual starter/feeder shall be full height of the panel. Sufficient clearance shall be maintained in the bus chamber for proper cooling of the busbar. Busbar shall be suitable for future extensions.

The control voltage of remote push button stations for motors is to be limited to maximum 30 V as per CEA Regulations, 2010. An intrinsically safe barrier shall be placed between the remote pushbutton station and motor starter panel, so that no dangerous voltage (for hazardous area) is transmitted for operation of the remote pushbutton station. The intrinsically safe barrier may be placed in the motor starter panel itself.

Low voltage power supply to panel contactors and intrinsically safe barrier power requirement may be generated through two nos. step down transformers placed at both ends of the panel. The low voltage secondary side of the transformers shall be connected to an auxiliary bus. Control voltage shall be tapped to individual motor starter/feeder panels from the auxiliary bus through auxiliary control MCBs in each starter panel.

[As supply source (captive gensets) shall be installed with NGRs, the neutral cannot be used anywhere in the system. Hence all control voltages will be referred to phase-phase only.]
Control voltage transformers shall have individual MCBs of sufficient ratings as breakers in both primary and secondary sides (individual for each transformer). Each of the transformers shall be able to take the entire control voltage load of the panel. One of the transformers shall be on line and the other shall be standby.

c) Starter/Feeder Panels:
No. and ratings of Starters/feeders will be as per individual panel outgoing details, given in Annexure- Panel Feeder Lists. However general description for these shall be as follows.

Description of Starter/feeder panels:

1) MCCB isolator (Isolation requirement):
Each motor starter shall be provided with one no. 415V(Ue), 600V(Ui), min. 36 kA breaking capacity, three pole MCCB fitted with inbuilt microprocessor controlled overload, short-circuit releases with adjustable settings for current& time and with Rotary Handle operating mechanism. For feeder panels also, three pole MCCBs shall be used with identical capacity and

type.
The MCCBs shall be operated from outside the panel. The MCCB handles shall also project outside the panel doors enabling breaker operation from outside the panel. All MCCB used shall be suitable for positive isolation requirement as per IEC 947-2. Control supply of individual starters shall be tapped from its own line; the starter shall be in-operative if the MCCB is off. However remote start/stop pushbutton supply shall be from 30 V phase-to-phase (maximum) auxiliary bus.

2) Panel components:
Various starters and feeders shall be housed in individual cubicles. Components shall be mounted on sheet steel base and all apparatus shall be suitable for front removal. All starters/feeders shall have suitably rated MCCBs as incomers. For feeder/starters above and including 20 HP, MCCB incomer connection to busbars shall be through suitably rated copper bus links/spreader bars only. This is to avoid mechanical stresses that may develop during short circuit condition.
Motor starters above and including 12.5 HP shall be star-delta starters. Starters below 12.5 HP shall be DOL starting.

Starter panel components like MCCBs, contactors, overload relays, RCBOs etc. shall conform to IEC60947-2/IS: 13947-2 and IS: 12640. All starter/feeders shall be provided with Type II protection.

Main components of individual starter/feeder panels (other than main incomers):

Starter panel components:
" Panel Incomer MCCB
" CBCT+ELCB combination (if not in-built)
" Magnetic contactor (for DOL or SD starters)
" Thermal overload relay
" Low voltage (maximum 30 V) supply for remote push button system, including all accessories
" Remote/local selector switch
" Local on/off (start/stop) pushbuttons
" Intrinsic safety barrier for the remote control system
" Ammeter (digital)
" CT, where required
" Control circuit MCBs
" LED indication lamps for on/off/trip status

Feeder panel components
" Panel Incomer MCCB
" CBCT+ELCB combination (if not in-built)
" LED indication lamps for feeder on/off/trip status

i) Incomer MCCB (as isolator/main switch)
ii) Earth leakage module in the downstream of MCCB (integral to MCCB, or through separate CBCT & earth leakage relay or directly mountable on the MCCB with variable current and time settings (0.03- 3.0 A and 0-3 second, in steps)
iii) For starter panels only- Motor Starter magnetic contactor and adjustable thermal overload relay
iv) Timer for star delta starter, range 0-60 seconds, adjustable in steps/continuous
v) Remote/ local selector switch- for facilitating remote/local starting of motor

vi) Local start/stop switch- for starting/stopping of motor from panel
vii) For starter panels only- Ammeter (accuracy class 1.0), directly mounted for starters below 10 HP and through CT for and above 10 HP.
viii) 'On', 'Off' and 'Overload' LED type indicating lamps

Make/models of the components:
Only the following makes/models of the components shall be used in the starter/feeder panels.

Name of component/ Make /Model/Rating
Main panel incomer MCCB:
Schneider Electric (Compact NSX with Micrologic 5.0 (minimum))/ Legrand (Model DPX with electronic LSIg release)/ Siemens (Sentron VL with ETU LSIg) /ABB (Tmax 1SDA054399R1(with ETU PR 332/333 or PR122/123)/Indo-Asian (X TEC series with ETU LSIg release)
Digital multifunction meter:
Swift-Encore (Swift Encore SW3)/ Siemens (PAC 3100)/HPL-Socomec (Diris A40)/Schneider (EM 6400 accuracy 0.5)
Incomer MCCB: Schneider Electric(Compact NSX range) /Legrand (DPX3 range)/Siemens (Sentron 3VT series)/ ABB (Tmax series)/Indo-Asian (X-TEC series)
RCBO: Schneider Electric/Legrand/Siemens/GIC
CBCT+ELCB combination: Schneider Electric (RH 197P+GA300 etc.)/Legrand (0260 88+ 0260xx series)/GIC/Prok-DVs
Magnetic contactor: (for DOL or SD starters) Schneider Electric (TeSys series)/Siemens (3RT series)/ABB (AXX series)/Indo-Asian
Thermal overload relay: Schneider Electric/Siemens/ABB/Indo-Asian
Timer: Schneider/Siemens/ABB/Indo-Asian
Remote/local selector switch: Siemens/L&T/Kaycee/Teknik/ABB
Local on/off (start/stop) pushbuttons: Kaycee/L&T/Recom
Ammeter: (digital) AE/Rishabh/L & T/Schneider
CT, where required: AE/Kappa/Siemens Wire wound, 1000/5, 15 VA, Class 1 to IS: 2705
LED indication lamps: for on/off/trip status L&T/BCH/ Teknik/Siemens/Schneider/ABB/Binay As per voltage rating, all with LVGP
Control circuit isolation: MCBs ('C' curve) for control circuit and instrument circuit protection, make: Schneider/Legrand/Indo-Asian

Important points to be considered while designing the starter/feeder panels:

i) **As the panel will be installed in an oil/gas mine, as per Central Electricity Authority Regulations 2010, the remote starting facility of starter panels for motors shall be suitable for voltage below 30 Volt and intrinsically safe.

ii) All MCCBs shall have provision for padlocking and shall be provided with suitable locks with three keys for each lock.
iii) MCCBs, contactors, overload relays shall be of one make only. However, earth leakage relays, CBCT etc. may be of different make than contactors/OLR etc. CBCT and sensing earth leakage relay shall be compatible and from the same manufacturer.
iv) One rating of components shall be used for a range of starters (e.g., one rating of contactors in all starters up to 20 HP, but suitable range of overload relay to match the panel rating). All device selection shall take motor starting current into consideration.
v) Though the area is non-hazardous, to maintain uniformity with other types of panels for hazardous areas, 3 phase 3 wire connection shall be used including lighting loads (through lighting transformer).

vi) Outgoing cables/bus links from the individual panels shall be terminated in individual TBs mounted in cable alleys. TBs will be sufficiently rated. Separate control and power TBs are to be used. TBs shall be covered/separated with insulation barriers.
vii) 1 (one) cubicle box with three phase 63 A RCBO as incomer and 12 nos. DP MCBs (minimum 10 A & 20 A) for illumination and power socket outlets for the panel installation area shall also be separately provided. This cubicle box will be a stand-alone type panel. Incoming power to the cubicle will be from lighting transformer, as the lighting for the entire installation will be phase to phase 240 V and will be supplied from the lighting transformers. The cubicle box shall be suitable for floor mounting on a sturdy MS frame.

3) Panel wiring:

i) All internal wiring and cabling inside the MCC starter panels shall be done with 1.1 KV grade fire retardant PVC insulated tinned copper multi-stranded flexible cables with proper lugs. All wires and cable shall have proper ferrule numbers for easy identification.
ii) Ring lugs shall be used at all critical connections such as CT connections. No more than two wires or lugs may be attached under any one screw. All control & CT wiring should be terminated on suitable TBs. All terminal strips to have minimum 2 nos. spare terminals to accommodate any modification required during commissioning / operation. All terminal strips shall be accessible for testing and troubleshooting/maintenance.
iii) All control wiring inside the panels shall be done with single core, fire retardant multi-stranded flexible copper PVC insulated (1100 V) wire, 1.5 mm2 for potential circuits and 2.5 mm2 for current circuits. Control wires shall be properly identified with ferrule numbers and suitably terminated with proper sized lugs; cable make- Finolex/Havells/Henley/Nicco/Reputed brand.

4) Features of the Panel:

i) Thickness of gland plates shall be minimum 3.0 mm.
ii) The panel doors shall have door latches suitable for latching in one turn only. Lifting hooks shall be provided.
iii) Special non-deteriorating Neoprene rubber gaskets shall be used in doors and as and where required.
iv) All MCCB Operating handles shall be accessible for operation without opening the cubicle door. The handles will be interlocked with doors, i.e., unless MCCB is in OFF position, door cannot be opened.
v) Adequate insulated barriers between the bus chamber and feeder shall be provided to achieve Form-2 separation as per IEC 439-1.
vi) MCCB incoming terminals are to be provided with insulating barrier so that once the door is opened, no live part is exposed.
vii) Vertical cable alleys with sturdy supports for carrying weight of vertically run PVCA cables will be placed next to the panels. The cable alleys will house sufficiently rated TBs. The cable alleys and vertical busbars shall be on either side of the panels.
viii) All connection links between busbar and MCCB incoming side and from outgoing side to the cable alley TBs (for feeders/starters above and including 20 HP) shall be made with rectangular section of copper bus links conforming to IS. Current rating of links shall be minimum 1.5 times (rating for unassembled sections) the switch rating. All joints shall be checked for proper contact area.
ix) Wiring cables from panel to door shall be protected with heavy duty PVC spiral binding.
x) All the hardware should be of high tensile steel duly zinc passivated for corrosion protection & fitted with proper sized heavy duty spring washer & two nos. heavy duty flat washers.
xi) Sufficient space should be provided for proper glanding, dressing, connecting up and

maintenance of cables. Adequate space should be provided for connecting the cable leads to the terminal blocks.
xii) Suitable cable supporting arrangement shall be provided inside the cable alleys to firmly grip the cables connected to the terminal blocks of the outgoing feeders.
xiii) All hinged doors shall be earthed with copper flexible loops / braids as per IS-3043.
xiv) A 50 x 6mm GI strip shall be provided with adequate holes (13mm dia each) with nut, bolts and washers for making earth connections for all panels and armours/screens of cables. Length of GI strip shall be same as panel length. The panel GI strap shall have provision with fasteners for connection to external earth electrodes with suitably sized GI strap.
xv) Panel length should be limited to 4.0 mtr. Height shall be suitable for operation of feeders as per ISI.
xvi) Suitable SS/brass material, NiCd plated single compression cable glands shall be provided in the panels. Gland sizes shall be provided by OIL during detailed engineering/drawing approval. Gland plates (3 mm thick) with suitable size knockouts shall be provided.

Important: All MCCBs should preferably be mounted vertically. Even if the MCCBs have to be mounted horizontally due to design of feeders, the door mounted handle shall have proper position same as in panels having vertically mounted MCCBs, so that there is no confusion in operating the handle. Suitable bus links/spreader bars to incoming/outgoing sides of MCCBs shall be provided as and where required.

Annexure- Panel Feeder List:

SL. NO.	INCOMER/STARTER/ FEEDER PANEL	CAPACITY/ MOTOR/ LOAD (HP/A)	QTY. (NO.)	PANEL CAPACITY (HP)	REMARKS
1	Incomer MCCB panel	400 A	2	-	
2	Outgoing feeder panel	100 A	6	-	
3	Outgoing feeder panel	100 A	2	-	1 no. for lighting transformer 1 no. for isolation transformer
4	Starter panel	20 HP	2	30 HP	Incomer MCCB shall be minimum 100 A. Star- delt starters are to be used. All th starters shall have remote/loca selector, as these will be operate remotely with the push butto stations near the load.
5	Outgoing starter panel	10 HP	2	10 HP	Incomer MCCB shall b minimum 63 A. Star-delta starter shall be used with remote/loca s/switch.
6	Note: Additional item 1 (one) cubicle box with double pole 63 A RCBO as incomer	63 A	1		This cubicle box will be a stand alone type panel. Incoming powe to the cubicle will be fron lighting transformer, as th lighting will be phase to phas 240 V.

	and 12 nos. DP MCBs (10/20 A minimum) for illumination and power socket outlets of the shed shall be provided. One 20 A industrial metallic plug socket is to be arranged in the box itself.					

Item # 2: Self Supporting Fully Auto Star-Delta Starter Panel (04 nos.)

ENCLOSURE AND FRAME:

Self-supporting, indoor, industrial type, dust and vermin proof, floor mounting fully automatic Star/ Delta Starter complete with stand, suitable for operation from front side. The enclosure to be made of 2.0 mm CRCA sheet built upon suitably sized heavy duty angle iron frame work on channel/angle iron sections (Min. 65 x 65x 8mm angles and channels) or rolled sections of 3.15 mm thick CRCA sheet. Danger Plate shall be fixed on front and back side of the enclosure. The entire framework & the sheet-work shall be given seven tank anti-rust treatment as per IS and then powder coated in DA Grey colour (paint thickness Min 50 micron). The design should be as per IS-8623, 13947, 13703, 4237. Protection shall be as per IP-54. The holes for power cable connection in brought out terminal links for incoming and outgoing power cables shall be at a height of minimum 400 mm from bottom of starter panel. Two nos. of earthing studs (min 15 mm dia) shall be provided on the bottom channels of the frame. The base channel shall have arrangement in the channel frame for securing the grouting bolts. Components shall be mounted on sheet steel base and all apparatus shall be suitable for front removal.

Ambient-40°C (Max)/ 5°C (Min), Humidity-90 % (Max). All components used must be suitable for the environment as mentioned. All hardware should be of high tensile steel & Galvanised/ Zinc passivated. Size of spring washers & flat washers should be as per relevant IS for individual bolt.

ENVIRONMENT:
Ambient- 42°C (Max)/ 5°C (Min), Humidity-90 % (Max). All components used must be suitable for the environment as mentioned.

ELECTRICAL FEATURE OF STARTER PANEL:

1) MCCB isolator (Isolation requirement):
Each motor starter shall be provided with one no. 100 Amps 415V(Ue), 600V(Ui), min. 36 kA breaking capacity, three pole MCCB fitted with inbuilt microprocessor controlled overload, short-circuit releases with adjustable settings for current& time and with Rotary Handle operating mechanism.
The MCCBs shall be operated from outside the panel. The MCCB handles shall also project outside the panel doors enabling breaker operation from outside the panel. All MCCB used shall be suitable for positive isolation requirement as per IEC 947-2. Control supply of individual starters shall be tapped from its own line; the starter shall be in-operative if the MCCB is off.

2) Panel components:
Components shall be mounted on sheet steel base and all apparatus shall be suitable for front removal. Starters shall have suitably rated MCCBs as incomers. MCCB incomer connection to busbars shall be through suitably rated copper bus links/spreader bars only. This is to avoid mechanical stresses that may develop during short circuit condition.
Starters shall be DOL starting.

Starter panel components like MCCBs, contactors, overload relays, RCBOs etc. shall conform to IEC60947-2/IS: 13947-2 and IS: 12640. All starters shall be provided with Type II protection.

Main components of individual starter panels:

INCOMER: Each motor starter shall be provided with one no. 100 Amps MCCB, 415V(Ue), 600V(Ui), min. 36 kA breaking capacity, three pole motor protection type MCCB fitted with inbuilt microprocessor controlled overload, short-circuit releases with adjustable settings for current& time and with Rotary Handle operating mechanism.
The MCCBs shall be operated from outside the panel. The MCCB handles shall also project outside the panel doors enabling breaker operation from outside the panel. All MCCBs used shall be suitable for positive isolation requirement as per IEC 947-2. Control supply of individual starters shall be tapped from its own line; the starter shall be in-operative if the MCCB is off.

POWER CONTACTORS: 3 nos. 415V TP power contactors:
AC3 current rating of each power contactor (minimum) shall be 65 Amps for long life. Coil voltage- 415 VAC. Two nos. additional potential free aux contacts (1 NO+ 1NC) shall be provided in Delta Contactor and duly wired to two nos. of terminal blocks for remote indication. All the contactors shall have same no. and type of auxiliary contact blocks. Current rating of aux. contacts shall be min 10 Amp AC, at 240 V AC. Make: Schneider/GE /ABB/Siemens/Indo-Asian.

OVER LOAD RELAY:
One no. thermal bimetal type overload relay (class 10) with adjustable current range, auto/manual reset selection, reset button shall be provided for motor protection. Thermal OLR will be direct acting. Relay shall also have inbuilt single phasing protection. Relay make: Same as power contactor.

TIMER: One no. Electronic timer. Operating time: 0-18 seconds. The timer shall provide a time delay of 50-60 ms during change-over from start to delta. Make: Schneider/Siemens/ABB/Legrand.

EARTH LEAKAGE PROTECTION: Earth leakage module in the downstream of MCCB (integral to MCCB, or through separate CBCT & earth leakage relay or directly mountable on the MCCB with variable current and time settings (0.03- 3.0 A and 0-3 second, in steps)
Make: Legrand/Schneider/GIC.

INSTRUMENTS AND INDICATING LAMPS:

Panel mounted, BIS or reputed International Standard approved, three phase Digital Voltmeter, 0-500 volts and three phase Digital Ammeter 0-50/300 Amps with selector switch for reading three phase voltage and three phase current. Both the meters should have 0.5% accuracy and

suitable for ambient conditions mentioned.
Bar Primary Resin Cast CTs of 50/5 ratio, 10 VA burden, class-1, conforming to IS- 2705.
Meter Make: AE/Rishabh
CT Make: AEI/ kappa / Conzerv/ L&T

Indicating Lamps to indicate Supply ON for all three Phases (Colour- Red/Yellow/Blue), Motor ON, Motor OFF, Motor TRIP. All indicating lamps shall be LED type of Binay/L&T/Siemens make.

START/STOP OPERATION: One set of START/ STOP push buttons shall be mounted on the starter door for motor operation. A separate terminal block shall be provided for connecting cable of remote push button station.
Make of push button: Siemens/GE/Schneider.

CONTROL AND INDICATION CIRCUITS: Control and indication circuits shall be protected with MCBs against overload and short circuit.
Make of MCB: Schneider/Legrand/ABB/Siemens/Indo-Asian

TERMINALS: Heavy duty, tinned copper brought out terminals having rectangular section and insulating supports of GRP/DMC shall be provided for incoming and outgoing power cable connections. Sufficient space shall be provided in the starter panel for cable termination, dressing and connecting cable leads to the brought out terminals.

POWER WIRING: All power wiring inside the panel shall be done with 1100 V grade, PVC insulated, flexible copper cable or tinned copper, PVC insulated busbars. Cable size shall be as per IS for assembled panels. For busbar the current rating shall be minimum two times the full load current for the particular bus section. All cables shall have tinned copper lugs for termination and ferrule numbers for proper identification. Tinned copper straps shall be used at all contactor terminals for termination in case cable is used for power wiring. All hardware for power cable connections shall be suitable for the environment mentioned.

CONTROL WIRING: All control wiring shall be done with 1100v grade, single core 2.5 Sq. mm. flexible PVC insulated copper cable. All cables shall have tinned copper lugs for termination and ferrule numbers for proper identification. Control wiring and instruments shall have MCBs for protection. One Contactor type Auxiliary Relay shall be used in the control circuit in case the contacts of protective relays and push button switches are not rated to handle switching currents of power contactor coils. Protective relays shall operate this relay and the aux contact of this relay shall trip the power contactors. Plug in type relay shall not be used. Current rating of aux contacts shall be min 10 Amp AC.

CABLE ENTRY: The panel shall have suitable cable entry holes on separate detachable gland plates fixed at bottom plate of the enclosure for entry of following cables:

1 no. incoming cable of size 3.5 c x 25 Sq.mm PVCA
2 nos. outgoing cables of size 4 c x 10 Sq.mm
2 nos. cables of size 4 x 2.5 Sq.mm PVCA for external PBS and remote indication through aux. contacts of delta contactor. All cable entries shall be blocked with knockouts.

LABELLING: Designation name plates of permanent type shall be provided for all components and terminals of the starter.

FEATURES OF THE STARTER:

1. All MCCBs shall have provision for padlocking and shall be provided with suitable locks with three keys for each lock.
2. MCCBs, contactors, overload relays shall be of one make only. However, earth leakage relays, CBCT etc. may be of different make than contactors/OLR etc. CBCT and sensing earth leakage relay shall be compatible and from the same manufacturer.
3. Special non-deteriorating Neoprene rubber gaskets shall be provided at door.
4. The panel doors shall have spring loaded door latches suitable for latching in one turn only. Lifting hooks shall be provided.
5. Sufficient space shall be provided inside the enclosure for proper glanding, dressing, and maintenance of cables. Adequate space should be provided for connecting the cable leads to the brought out terminals.
6. Wiring cables to door shall be protected with heavy duty PVC spiral binding.
7. Starter Panel door, earth points of switch shall be earthed with copper flexible loops/ braids as per IS-3043.
8. All items of the starter must be approved by IS (with latest amendments).
9. All items shall be marked in permanent manner. PO No. and date, WBS: PI.14ASPO.070.03 shall also be marked with engraved type lettering on riveted SS plates on starter panel enclosure. Detail of labeling text shall be provided at the time of approval of drawings.

Item # 3: NGR Panel (02 nos.)

A. General Description of Panel:

CONSTRUCTION

The NGR unit shall consist of two parts: 1) the resistor grid enclosed in a metallic enclosure, and 2) the NGR monitoring system, enclosed in a separate chamber of the same enclosure/panel.

1) Resistor and resistor enclosure

a) Resistor assembly
The resistive element/grid material shall be low temperature coefficient, resistor grade stainless steel, resistor grade 1JR (or Cu-Ni, Ni-Cr or Fechral) of sufficient mass to withstand the rated current and prescribed duty. The resistive element/ resistor grid shall be made of unbreakable, corrosion proof jointless elements wire wound around a ceramic (or micanite) core supported on a porcelain pad.
The resistors shall be mounted in heavy gauge corrosion resistant support frames, using stainless-steel hardware. The entire resistor assembly shall be mounted and supported on glazed insulators rated for the system voltage. All resistor terminals and interconnections between resistor units shall be stainless-steel using stainless steel hardware including lock washers. High current connections shall be spot or TIG welded as appropriate. Connections between resistors and bushings shall be solid copper or stainless steel bars. The unit shall be designed to permit the expansion of supporting rods when submitted to high operating temperatures.

Resistor grid assembly mounting structure shall be properly supported to absorb vibration and stress during faults and transit.
Neutral cable shall be brought to one terminal of the NGR unit. The other end of the NGR unit shall be suitable for connection to ground through earth electrode. These end connections of the resistor unit will be brought out to terminal box or through top or side mounted high voltage

bushings. Stand -off / support insulators shall be ceramic or epoxy resin cast.
The resistor grid shall be suitable for
Rated Voltage : 415/√3 Volts
Rated Current : 750 mA
Rated Resistance : 330 Ohms
Time Rating : 10 Sec.
Temperature Rise : 375 Deg. C.
Location : Indoor
Tolerance : + / - 10 %
Degree of Protection: IP -33
Applicable Standard: IEEE -32: 1972

b) Resistor enclosure panel
Resistor grid assembly shall be housed in an enclosure made of heavy gauge sheet steel (= 2mm), self supporting and floor mounted, cubicle type, indoor, dust and vermin protected. Enclosure shall be supported on steel support channels, suitable for fixing with grouting bolts. Sheet steel shall be used on a rigid framework of suitably sized steel angles and channels, welded or bolted together with stainless-steel hardware. Front of the panel shall be hinged on the left side to serve as an inspection and service door, fitted with clamps and special non-deteriorating neoprene gaskets. Enclosure shall be provided with bolt-on louvered covers (fitted with fine wire mesh inside) on sides for circulation of air. The top of the enclosure shall be embossed with stiffening ribs. Lifting lugs shall be provided on the top of panels. Bottom shall be elevated to minimum 6 inches/15 cms above the base of the unit. Bottom shall be screened for maximum cooling of resistors. Suitable earthing studs are to be provided on two sides.
Protection rating of the enclosure shall be IP 42, using roof shaped louvers shielded with wire mesh (inside). A durable corrosion resistant nameplate permanently attached to one side cover shall show the manufacturer and the complete rating. Clear warning labels (danger, high voltage, earthing etc.) shall also be fixed at appropriate places.
Enclosures shall be suitably cleaned, primed and powder coated/ spray painted, colour of paint light gray to shade 631 as per IS: 5.

One strip type panel heater shall be installed in the resistor panel. The heater shall be provided with a adjustable setting thermostat.

Limiting Dimensions (L X B X H) = 600 mm x 500mm x 600 mm

2) NGR monitoring system

NGR monitoring system shall be placed above the resistor enclosure. Sufficient physical gap (minimum 10 cms) shall be allowed so that air will circulate freely above the resistor enclosure. Dimensions of the panel for NGR monitoring will be same as the resistor enclosure.

Functioning of the NGR MONITORING system is as follows:

Ground-fault protection, coordination, and annunciation systems depend on the integrity of the NGR. If the NGR fails, these systems become inoperative. In addition, an open NGR causes the system to become ungrounded and exposure to transient overvoltages is possible.

Monitoring of the NGR shall include the following considerations:
1) Monitoring the NGR connections to the neutral and to the ground bus- for continuity (as resistors are unlikely to fault on short circuit)
2) Monitoring the neutral/NGR current through a residual current CT provided in the NGR path

3) Monitoring the neutral-to-ground voltage
4) Audio- visual annunciation of ground fault and NGR fault

The NGR monitor shall measure changes in NGR resistance, current in the neutral and neutral-to-ground voltage. The NGR monitor shall coordinate these three measurements and operate output contacts when an NGR fault or a ground fault is detected. NGR monitor shall respond to fundamental-frequency current and voltage, and it is not influenced by harmonics.

The output contacts shall be used to operate alarms (buzzer) and visual annunciation devices. Potential free output contacts (minimum 02 pairs) shall also be provided for future use, such as tripping of main breakers etc.

Main components of the NGR monitoring system shall include, but not limited to, the following:

a) Monitor for Ground Fault & NGR (with band pass filter for frequencies other than 50 Hz)
b) Coupling device/sensing resistor for NGR Monitor
c) Residual current sensing C. T. for NGR Monitor
d) Output relay with sufficient nos. of potential free NO and NC contacts
e) Alarm indicator & operator panel with visual annunciation (with LED lamps) for NGR fault and ground fault and buzzer
f) Incoming 230/240 V, 50 Hz AC supply with sufficiently rated MCB for power supply to monitor panel

NGR monitoring system shall be housed in an enclosure made of heavy gauge sheet steel (= 2mm), self supporting, cubicle type, indoor, dust and vermin protected. The enclosure shall be supported on steel support angles/channels, suitable for fixing (with nuts and bolts) on top of the NGR housing panel. At least 6 (six) inches gap shall be maintained between the top of the NGR housing and bottom plate of the NGR monitoring system panel, for maintaining air flow. Sheet steel shall be used on a rigid framework of suitably sized steel angles and channels, welded or bolted together with stainless-steel hardware.

Front of the monitoring panel shall be hinged on the left side for easy access to the components inside and fitted with clamps and special non-deteriorating neoprene gaskets. The top of the enclosure shall be slightly overhung and sloped. It shall be embossed with stiffening ribs. Lifting lugs shall be provided on the top of panels.
Suitable earthing studs are to be provided on two sides.
Protection rating of the enclosure shall be minimum IP 53. A durable corrosion resistant nameplate permanently attached to one side cover shall show the manufacturer and the complete rating. Clear warning labels (danger, high voltage, earthing etc.) shall also be fixed at appropriate places.
Enclosure shall be suitably cleaned, primed and powder coated/ spray painted, colour of paint light gray to shade 631 as per IS: 5.

The buzzer and LED indication lights/test/reset buttons shall be mounted on the front door. Suitable engraved, corrosion resistant legends shall be used for each component/function. Monitor windows for remote indicator alarm and operator panel will also be mounted on the door.

As the components of NGR monitoring system shall be wired up to the NGR, steel rigid conduits shall be used to run the signal cables from NGR to monitoring panel. It may be noted that residual current transformer (for sensing NGR current) and coupling device/sensing resistor

may be required to be installed in the NGR panel for maximum effectiveness. Conversely, neutral cable shall be first routed through the monitoring panel and then to NGR.
In such a case, the monitoring panel shall be provided with suitable bushings/ terminal box (as given in the description for NGR panel) for termination of the neutral cable.

Elements connected to the NGR are subject to line-to-neutral ground-fault voltages and must be evaluated in all failure modes. Coupling devices must not transfer hazardous voltages to associated monitoring equipment.
Atmospheric electrical conditions, such as the presence of charged clouds, can affect an electrical substation feeding overhead lines. An NGR monitor used in this application must be immune to these conditions.

The measurements made by an NGR monitor can be useful when evaluating system problems. An analog signal can be used to provide local earth-leakage-current metering. An NGR monitor with a communications interface can allow data access with a local PC or with a network.
NGR Monitor panel Limiting Dimensions (L X B X H) = 600 mm x 500mm x 600 mm

Technical data for NGR monitoring panel components:

Components like NGR monitor, coupling device and current transformer shall be of one make only for compatibility, from either of the following manufacturers.

1) Bender, USA, 2) Startco/Littelfuse, Canada (Littelfuse SELCO- India), 3) i-Gard, Canada

a) Monitor:(Model nos.: Bender- "RC48N" / Startco- "SE-325" / i-gard- "Sigma")

Supply voltage 230-250 VAC, 50 Hz
Response value, voltage measurement adjustable from 20 V to 400 V
Response value, residual current adjustable from 0.1 A to 10 A
Response delay adjustable 0.1 s to 2 s
Switching elements (alarm relay) 2 Form C contacts
Rated contact voltage AC 250 V / DC 300 V
Limited making capacity AC/DC 5 A
Switching elements (GFA, NRA) 1 N/O contact each
Rated contact voltage AC 250 V / DC 300 V
Limited making capacity AC/DC 5 A
Test of the electromagnetic compatibility (EMC)
Immunity according to IEC 62020
Emissions according to EN 50081
Emissions according to EN 55011/CISPR11 Class A
b) Coupling device/sensing resistor for NGR Monitor: As per manufacturer's design and catalogue

c) Residual current sensing C. T. for NGR Monitor
Internal dia: >= 70 mm
Rated voltage: >800 V
Rated primary residual current: 10 A
Rated secondary residual current: 0.01 A

d) Output relay with sufficient nos. of potential free NO and NC contacts
The relay shall be used for initiating audio-visual alarm (or shutdown of the main breaker of generator or transformer). Relay shall be contactor type. No plug-in type relay shall be used.

The make of the relay shall be Telemecanique (model TeSys, D or K model)/ GE / Siemens/Legrand/L & T/ABB/Indo-Asian

e) Alarm indicator & operator panel with visual annunciation for NGR fault and Ground fault and buzzer
Suitable alarm indicator and operator panel with LED indication lamps for Ground fault and NGR fault annunciation and push buttons for test and reset functions along with buzzer shall be installed in the monitor panel.
Visual annunciation for NGR fault and ground fault will be through LEDs (labeled "NGR Fault" and "Ground Fault").
LEDs shall be of suitable voltage, size 22.5 mm. Make-Siemens/ L&T/ BCH/ Binay/ Telemecanique.
Audio annunciation will be through a buzzer mounted inside the monitor panel. Buzzer shall be suitably rated for continuous duty. Buzzer supply shall be of suitable AC voltage. Make-Siemens/Schneider/BCH/L & T.
LEDs and Buzzer shall be mounted on the front door of the monitor panel. Test and reset buttons on the front door of monitor panel shall be provided for testing of the NGR and GFA test circuits from the NGR monitor.
Test and reset buttons make-Siemens/Schneider/BCH/L & T.

Reset button will silence the buzzer, but the LEDs will remain on till the time fault is detected and cleared.

The indication LEDs and test and reset push buttons on the front door shall be in addition and external to the G/F & NGR monitor (which may have these functions built-in).

f) Incoming 230/240 V, 50 Hz AC supply with MCB isolation for power supply to monitor panel
Power supply to the monitor panel shall be through suitably rated MCB and transformers (if required to step down to the voltage level of monitor panel components supply). Separate circuits through fuses/MCBs shall be used for the monitor and audio-visual annunciation panel.
Moulded HRC fuse holders with suitably rated fuse links; make- GE/Schneider. MCB make: Legrand/ Schneider/ Havells. Control transformer make: AE/L&T/Kappa.

Separate isolation fuse link and an MCB shall be provided for switching power supply to NGR space heater. Space heater shall be controlled through an adjustable thermostat.

3) General:

a) Control wiring shall be done with 1.5 sq mm, flexible copper, 1100 V grade PVC insulated wires approved by ISI, TAC, FIA. All wiring will have tinned copper lugs & terminal blocks as required. Wiring for the residual current CT shall be done with 2.5 sq mm, flexible copper, 1100 V grade PVC insulated wires approved by ISI, TAC, FIA & have copper lugs. Colour code for wires shall be followed as per IS. Ferrules shall be provided for identification of cables. Make of cables: Finolex/ Havells/ L&T or other reputed make.
b) All components shall be labeled for easy identification with metallic embossed identification tags.
c) Panels shall be duly tested as per IS: 8623 at manufacturer's works and routine test certificate shall be submitted at the time of final inspection.

Item # 4: Lighting Distribution Board (LDB Panel) (01 no.)

A. General Description of Panel:

TECHNICAL SPECIFICATIONS:

A. Panel shall have the following features:

1. Panel shall be indoor, industrial and semi -cubicle type.
2. Panel shall be built on Self supporting, floor mounting, rigid framework.
3. The frame of the panel shall be sufficiently strong and made of minimum 50 x 50 x 6mm MS angle iron with intermediate members of suitable section & size. The frame shall be mounted on a bottom structure made from 75 x 40mm MS channel.
4. The board shall be sheet steel clad, cubicle type made of 2.0mm thick MS CR sheet.
5. Board shall be Dust / vermin proof and weatherproof with IP54 degree of protection.
6. Bottom detachable gland plates made from 3 mm thick MSCR sheet shall be provided for all cable entries. Height of bottom detachable gland plate shall be 800 mm from floor level.
7. The entire metal work shall be treated with seven tank antirust treatment as per IS and then powder coated in DA Grey color.
8. Special non-deteriorating Neoprene rubber gaskets shall be provided between all joints.
9. Panel shall be designed for Ambient of 45°C (Max)/ 5°C (Min) and Humidity-95% (Max).
10. Board shall be suitable for operation from front side.
11. All panel doors shall be provided with single turn latches for opening / closing.
12. Danger plates shall be fitted on front and back of the panel.
13. Adequate nos. of lifting lugs shall be provided on top.
14. Ventilation louvers are to be provided shall be guarded with wire mesh.
15. Internal earthing between fixed base of the board's enclosure and doors shall be provided with suitably rated, PVC insulated, flexible copper earth wires or copper braids of suitable rating as per IS.
16. Earthing bus shall be provided at bottom of the panel. Earthing Bus shall be made of 50x5 mm GI straps with 80 micron galvanisation thickness. Brought out studs shall be provided on two sides where holes drilled for connection with main earth electrodes. Suitably sized zinc passivated double nuts and spring washers shall be provided for earth cable/ strap connections.

Legend/name plate as "AREA LIGHTING DISTRIBUTION BOARD (240V Ph-Ph)" shall be provided at the top centre made with anodized aluminum plate riveted to the body of the panel. The letter size shall be minimum 3/4".

B. PANEL COMPARTMENTS / SECTIONS

The LIGHTING DISTRIBUTION BOARD shall broadly have the following compartments / sections.
A) Incomer section
B) Outgoing section

1) INCOMER SECTION:

The incomer section shall contain one no. 100A, FP CFS/SDF fused 100 A as isolator switch.

The incomer section shall be housed in a compartment separate from the cubicle containing the outgoing section and shall be complete with tinned copper brought out terminals of suitable rating and single compression cable gland suitable for terminating 1 no. x 4C x 50 mm², PVCA copper cable provided on the bottom detachable gland plate. Suitably rated single compression

gland and tinned copper lugs for all incoming cable connections shall be supplied with the brought out terminals.

2) OUTGOING SECTION:

The outgoing section shall comprise the following:

1. One no. 4P, 100 A rated MCCB as incomer with suitably rated insulated and colour coded copper bus bars. The outgoing of the incomer CFS shall be connected to the MCCB incomer through insulated copper bus links. The MCCB shall have microprocessor controlled trip unit for protection with adjustable settings [long delay (0.4-1.0 In)/short delay (1.5-10 long delay setting)/ground fault (0.1-1.0 In) with individual time settings] with separate add-on type earth leakage module. The earth leakage module will have adjustable leakage current setting of 30 mA- 3 A in steps and adjustable time settings.
2. 9 nos. DP, 20 A RCBOs (sensitivity 100mA) distributed & wired up evenly in Ph-Ph circuits as outgoings.
One no. such RCBO shall be provided in the panel as spare, without connection.
3. The outgoing terminal of the individual DP MCBs will be terminated to the TB through 1C, 4 sq mm and multi-stranded flexible copper cables.
4. One no. Terminal block shall be provided at the rear of the panel for all the outgoing terminations housed in a reverse entry cable entry box.
5. Arrangement shall be provided to terminate the outgoing cables from bottom of the panel. Suitably rated tinned copper lugs for all outgoing cable connections shall be supplied with the TB.
6. Sufficient space shall be provided for cable termination, dressing and connecting cable leads to the brought out terminals.
7. Suitable cable entry arrangement with detachable gland plates shall be provided. Adequate nos. of single compression heavy duty SS or nickel plated brass cable glands suitable for PVCA, 3C, 4 sq mm Copper cable shall be provided on the bottom detachable gland plate.
8. Adequate nos. of saddles shall be provided at rear of the panel for rigidly supporting the outgoing cables.

C. MAKES OF COMPONENTS:

Item	Make
CFS / SDF	: GE/Havell's /Schneider/Legrand
MCCB	: Legrand /Schneider /Siemens/ABB [Schneider Electric (Compact NSX With Micrologic 2.0 or above)/ Legrand (Model DPX with electronic LSIg release)/ Siemens (Sentron VL with ETU 40/42-LSIg/LSINg) /ABB (Tmax1SDA054399R1(with ETU PR 332/333 or PR122/123)/Indo-Asian (X TEC series with ETU LSIg release)
RCBOs / MCBs	: Legrand /Schneider /Siemens/ABB
HRC Fuses / Fuse Holders	: GE/Bussman
Terminal Blocks /DIN Channel	: Connectwell / Tosha
Wiring Cables	: Finolex /Havell's/Reputed make with OIL's approval
Lugs	: Dowell's

<u>Spares [For all the items]: (Cost of the same to be included with main item)</u>

List of minimum indicative spares (to be supplied with each item as per OIL approved Bill of

Materials): All spares shall be exact replacement of the component in the item, with the same rating/make/model with the exactly same accessories.

A. PMCC Panel -01 (one) no.

List of minimum indicative spares (to be supplied with the panel as per OIL approved Bill of Materials):

a. Main panel Incomer MCCB - 01 (one) nos.
b. All other outgoing feeder/starter panel MCCBs- 02 (two) nos. of each rating (100 A/63A)
c. Intrinsic safety barrier for PBS -3 (three) nos. of each rating/size
d. TP Power Contactors with aux contact set/overload relay/RCBO/MCB/CBCT/ELR (in conjunction with CBCT)/Intrinsic safety barrier for PBS -3 (three) nos. of each rating/size
e. CBCT- 02 (two) nos. of each rating/size/type, if supplied
f. ELR (in conjunction with CBCT) -2 (two) nos. of each rating/size/type, if supplied
g. Ammeters and CTs- 02 (two) nos. of each rating and size
h. Remote local selector switch and local start/stop switch- 02 (two) nos. of each rating/ type
i. ON/OFF/OVERLOAD/Other types LED indication lamps with low voltage glow protection- 12 (twelve) nos. each colour/type
j. Control MCBs- 02 (two) nos. of each rating

B. Motor Starter (Star/Delta Starter) Panel- 04 nos.

a. Incomer MCCB - 02 (two) nos.
b. TP Power Contactor with aux contact set, as used in the starter panel /overload relay/ RCBO/MCB/
c. CBCT/ELR (in conjunction with CBCT) -2 (two) nos. of each
d. Ammeters and CTs- 02 (two) nos. of each rating and size
e. local start/stop switch- 03 (three) nos. of each
f. ON/OFF/OVERLOAD/Other types LED indication lamps with low voltage glow protection- 12 (twelve) nos. each colour/type
g. Control MCBs- 6 (six) nos. of each rating

C. NGR with Monitoring Panel (two nos.)- The following spares will be for two units of NGRs with monitoring panels

a. Monitor for Ground Fault & NGR- 01 (one) nos.
b. Coupling device/sensing resistor for NGR Monitor- 01 (one) nos.
c. Residual current sensing C. T. for NGR Monitor - 02 (two) nos.
d. Output relay with NO and NC contacts- 03 (three) nos.
e. Colour LEDs (complete) set for "NGR Fault" and "Ground Fault" indication- 04 (four) nos. each

D. Lighting Distribution Board- 01 (one) no.

Bidder to quote the spare items for their offered LDB.

If felt necessary, bidder may include further items in the above spares list. Prices of the spares shall be shown separately and these will be included for price evaluation/comparison of the

bids. In the event of an order, final list of spares to be supplied shall be approved by OIL, after drawing approval.

Drawings and Documents [For all the items]:

1. The following documents are required to be submitted with the offer.

i) Confirmation that the offered items shall conform to all the points of the tender. Bidder shall mention any deviations or other items/ points not indicated /included in the specifications but deemed necessary for design, Installation and commissioning, efficient control and operation of the items. However, proper justification for deviation must be given. Acceptance of deviation/s shall be entirely at OIL's discretion
In case of an order on the bidder complete tender specs and the deviations accepted by OIL in writing shall only be mentioned in the order.
ii) Quality Management Certification ISO : 9001 # 2008 version for Design, manufacture, installation and servicing of medium voltage Electrical control and distribution panels.
iii) Copy of test certificate of panel with busbar rated 1000 Amps or above for fault level of 50kA for 1 second from CPRI or any govt. approved NABL accredited test laboratory
iv) Indicative dimensional/GA and layout drawings of the offered PMCC panel, single line diagram, indicative wiring diagram, Bill of Materials and datasheets/catalogues of all the components used in the PMCC panel
v) Indicative dimensional/GA and layout drawings of the offered motor starter panel, single line diagram, indicative wiring diagram, Component layout drawing, Bill of Materials and datasheets/catalogues of all the components used in the starter panel
vi) Indicative dimensional/GA and layout drawings of the offered NGR panel, single line diagram, indicative wiring diagram, Component layout drawing, Bill of Materials and datasheets/catalogues of all the components used in the NGR panel

vii) Indicative dimensional/GA and layout drawings of the offered lighting DB panel, single line diagram, indicative wiring diagram, Component layout drawing,Bill of Materials and datasheets/catalogues of all the components used in the LDB panel
viii) Credentials of bidder having minimum 05 (five) years (till the bid closing date) experience in design, fabrication and testing of LT PMCC Electrical Panels with ACBs/ MCCBs. During this period bidder should have manufactured and supplied minimum 01 nos. of PMCC/MCC/PCC/Feeder Pillar panels to Govt./semi-govt./PSUs/public limited companies. Credentials for satisfactory execution of these orders shall be submitted.
ix) Credentials of Bidder having minimum seven tank anti rust treatment system and powder coating facility for treatment and painting of sheet metal works for durability
x) Indicative bill of materials with spares list and prices of spares for all the quoted items separately. The list of minimum indicative spares to be supplied with each item is given in the detailed description.
xi) Filled up technical check list (Including credentials for supporting BRC evaluation)
xii) General Quality Assurance Plan of the manufacturing process of the OEM

2. Detail foundation drawing of the PMCC/NGR/Starter/LDB panels, drawing showing termination details, full wiring diagram, component layout diagram and complete bill of material for all the items must be submitted to OIL for approval within 30 days after placement of the order. OIL shall modify/correct drawings as necessary. The manufacturing of panel shall start only after approval of the drawings by OIL. Inthe event of an order on the party complete tender specifications and the deviations accepted by OIL in writing only shall be mentioned in the order.

3. Supplier shall also submit detailed ordered item-specific Quality Assurance Plan for the items for OIL's approval within 30 days after placement of order. Inspection and testing details of each and every component shall be elaborately given in the QAP.

4. Four spiral bound sets of the following documents, drawings and literatures for each of the itemsare to be supplied with the items:
(i) General arrangement, foundation, schematic diagram and wiring diagrams ("as-built")
(ii) One copy of laminated wiring diagram of the starter shall be kept in a metallic document holder fixed on the inside of the front cover, for all the stand-alone type starters.
(iii) Works Test report and Routine test certificates containing result of tests done at factory during inspection and routine test results
(iv) Guarantee Certificate
(v) Technical Catalogues/manuals of Moulded Case Circuit Breakers, starter components and Digital Meters, NGR and monitoring panel components
(vi) Bill of Materials with part description, part nos. and details of items/components
(vii) Operation and Maintenance manual of panels and components

TEST AND INSPECTION [For all the items]:

The items shall be inspected and tested by OILs representative at manufacturer's works before dispatch as per following details. Party must give 15 days prior notice to OIL for inspection.

Special Notes: 1

The bid shall conform generally to the terms and conditions given in the bidding documents. Notwithstanding the general conformity of the bid, the following requirement will have to be particularly met by the bidders without which the same will be considered non-responsive and rejected:
1. Bidder must be an OEM (415 VAC PCC/PMCC/MCC/NGR panel designer & manufacturer) or an authorized agent/dealer of OEM of such panel manufacturer. Authorized agent/ dealer shall submit valid authorization/ dealership certificate along with the bid.
2. Bidder must have minimum 5 (five) years' experience (till the bid closing date) in design, engineering, manufacture/ fabrication and testing of LT PMCC Electrical Panels with ACBs/ MCCBs. During this period bidder should have manufactured and supplied minimum 01 Nos. of PMCC/MCC/PCC/Feeder Pillar panels to Govt./semi-govt./PSUs/public limited companies. Credentials for satisfactory execution of these orders shall be submitted along with the bid.
In case of authorized dealer/agent, experience of OEM shall be applicable in such case and requisite credentials shall be submitted by the authorized dealer/agent.
3. Bidder must submit copy of test certificate for busbar rated 1000 Amps or above for fault level of 50kA for 1 second from CPRI or any govt. approved NABL accredited test laboratory.
4. Bidder must agree for installation and commissioning of the items at OIL's designated site and installation and commissioning charges shall be quoted separately.
5. To ascertain the inter-se-ranking, the comparison of the responsive bids will be made on the basis of total amount quoted for all the items (with supply, installation and commissioning charges) of the tender.
6. In case of identical lowest offered rate by more than 1(one) bidder, the selection will be made by draw of lot among the bidders offering the identical lowest rates.

Special Notes: 2

1. PMCC panel, NGRs, self supporting motor starter panels and lighting distribution board shall be installed and commissioned by the supplier at the designated location of OIL as per

instruction and as listed in the tender.
Supplier will be intimated one month in advance for installation and commissioning. Boarding, lodging and transportation of commissioning personnel will be in the scope of the supplier. Bidder shall quote commissioning charges separately.
All necessary manpower, tools and tackles, instruments etc. required for commissioning shall be in the scope of the supplier.

2. The following documents shall be submitted with the bid for scrutiny:
i) Confirmation that the offered items shall conform to all the points of the tender. Bidder shall mention any deviations or other items/ points not indicated /included in the specifications but deemed necessary for design, Installation and commissioning, efficient control and operation of the items. However, proper justification for deviation must be given. Acceptance of deviation/s shall be entirely at OIL's discretion
In case of an order on the bidder complete tender specs and the deviations accepted by OIL in writing shall only be mentioned in the order.
ii) Quality Management Certification ISO : 9001 # 2008 version for Design, manufacture, installation and servicing of medium voltage Electrical control and distribution panels.
iii) Copy of test certificate of panel with busbar rated 1000 Amps or above for fault level of 50kA for 1 second from CPRI or any govt. approved NABL accredited test laboratory
iv) Indicative dimensional/GA and layout drawings of the offered PMCC panel, single line diagram, indicative wiring diagram, Bill of Materials and datasheets/catalogues of all the components used in the PMCC panel
v) Indicative dimensional/GA and layout drawings of the offered motor starter panel, single line diagram, indicative wiring diagram, Bill of Materials and datasheets/catalogues of all the components used in the starter panel
vi) Indicative dimensional/GA and layout drawings of the offered NGR panel, single line diagram, indicative wiring diagram, Bill of Materials and datasheets/catalogues of all the components used in the NGR panel
vii) Indicative dimensional/GA and layout drawings of the offered lighting DB panel, single line diagram, indicative wiring diagram, Bill of Materials and datasheets/catalogues of all the components used in the LDB panel
viii) Credentials of bidder having minimum 05 (five) years (till the bid closing date) experience in design, fabrication and testing of LT PMCC Electrical Panels with ACBs/ MCCBs. During this period bidder should have manufactured and supplied minimum 3 (three) nos. of PMCC/MCC/PCC/Feeder Pillar panels to Govt./semi-govt./PSUs/public limited companies. Credentials for satisfactory execution of these orders shall be submitted.
ix) Credentials of Bidder having minimum seven tank anti rust treatment system and powder coating facility for treatment and painting of sheet metal works for durability
x) Indicative bill of materials with spares list and prices of spares for all the quoted items separately. The list of minimum indicative spares to be supplied with each item is given in the detailed description.
xi) Cost of spares shall be mentioned separately with the cost of items and will be evaluated accordingly.
For example, assuming the spares for the PMCC panel are two nos. of MCCBs, the cost of these MCCBs shall be quoted separately along with the cost of the PMCC panel and the overall cost of the panel and the MCCBs shall be evaluated.
xii) Filled up technical check list (Including credentials for supporting BRC evaluation)
xiii) General Quality Assurance Plan of the manufacturing process of the OEM

3. In the event of an order, successful bidder shall submit fresh sets of detailed drawings (as mentioned above) within one month of placement of order which shall be approved by OIL before actual assembly/ manufacturing of the items.

4. Routine Test certificates/reports for the PMCC panel, motor starter panel, NGR with NGR monitoring panel and lighting DB as per relevant standards shall be submitted at the time of final inspection by OIL's representative failing which despatch clearance will not be given. 5. Offered items must be new and in unused condition. No reconstructed/ rebuilt panels will be acceptable. 6. Components used in the PMCC panel, motor starter panel and NGRs shall be of makes (as given in the detailed description) and easily available. Bidder shall submit Bill of Materials (including any additional item to the item list given in the detailed description, if considered essential). Bidder shall also supply all spares essential for installation and commissioning of the items at the designated site of OIL. 7. Bidder shall also include in their scope of supply the operational spares for all the items in their offer. The quantities of the spares for each item are given in the detailed description of all items. The spares will be exact replacement with the full rating, make and model of the units fitted in the panel. Details of spares are to be included with the offer. 8. OIL representatives shall carry out pre-despatch inspection of panels and witness all necessary testing at manufacturer's works. Bidders shall separately quote charges towards inspection and witness test, if any. [To and fro charges of OIL's personnel to manufacturer's works will be to OIL's account]. 9. Routine Test certificates/reports for the PMCC panels carried out at manufacturer's works as per relevant IS shall be submitted at the time of final inspection by OIL's representative failing which despatch clearance will not be given. 10. Items shall be guaranteed for 12 (twelve) months from the date of commissioning. 11. Supplier shall submit "As-Built" drawings [6 (six) copies each] for the PMCC panels (after final assembly and commissioning at site), NGR with monitoring panels and lighting DB before handing over the same to OIL. In addition, supplier shall also submit technical brochures & operation and maintenance manuals of all items used in the panels. 11. Packing shall be done properly to avoid transit damage and water/ moisture ingress. 12. The items will be used in the NELP/PEL/ML areas of OIL.	
Item No. 20 **INSTALLATION AND COMMISIONING - QTY= 01 AU**	

NOTE:

Bidders should submit their bids (preferably in tabular form) explicitly mentioning compliance / non compliance to all the NIT terms and conditions of NIT

Price schedule for Spares.

(To be uploaded as notes & Attachment)

Sl. No.	Item	Qty.	Unit rate (with applicable taxes etc.)	Price
1	Main panel Incomer MCCB (400 A)	1		
2	Panel outgoing MCCB 3 pole- 100 A	4		
3	Panel outgoing MCCB 3 pole - 63 A	2		
4	4 pole 36 kA LSIG type MCCB- 100 A	1		
5	Four pole SDF- 100 A	1		
6	Intrinsic safety barrier for PBS, of each rating of motor starters	3		
7	Contactors (with aux. contacts) for 30 HP SD starters	6		
8	Contactors (with aux. contacts) for 10 HP SDS/DOL starters	6		
9	Bimetallic thermal overload relay for 30 HP SDS	6		
10	Bimetallic thermal overload relay for 10 HP SDS/DOL	6		
11	Earth leakage module (or CBCT+ELR) for 400 A MCCB	2		
12	Earth leakage module (or CBCT+ELR) for 100 A MCCB	3		
13	Ammeter with CT	2		
14	Indication lamp (LED)- Red/Yellow/Blue/Amber/Green (5 each)	25		
15	HRC control fuses	4		
16	Control fuse holder	12		
17	Monitor for Ground Fault & NGR	1		
18	Coupling device /sensing resistor for NGR and monitor	1		
19	Residual current sensing CT for NGR monitor	1		
20	Output relay with NO+NC contacts	2		
21	DP RCBO 20 A	6		
22	DP MCB 10A/20 A	6		
23	Control MCB 4/6 A	4		

Technical Bid Checklist **Annexure-EEE**

Tender No.	
Bidder's Name :	

		Compliance by Bidder	
SL. NO.	**BEC / TENDER REQUIREMENTS**	Indicate 'Confirmed' / 'Not Confirmed' / Not applicable	Indicate Corresponding page ref. of unpriced bid or Comments
1	**Bidder to confirm that he has not taken any exception/deviations to the bid document .**		
2	**Confirm that the product offered strictly conform to the technical specifications.**		
3	**Confirm that the Offer has been made with Bid Bond / Bank Guarantee / Earnest Money along with the offer (Wherever Applicable) ?**		
4	**Confirm unconditional validity of the bid for 120 days from the date of opening of techno-commercial bid.**		
5	**Confirm that the prices offered are firm and / or without any qualifications?**		
6	**Confirm that all relevant fields in the on-line biding format been filled in by the bidders for the items quoted by them.**		
7	**Confirm that the the price bid is in conformity with OIL's online bidding format ?**		
8	**Confirm that the Bid comply with all the terms & conditions ?**		
9	**Confirm that the offers and all attached documents are digitally signed using digital signatures issued by an acceptable Certifying Authority (CA) as per Indian IT Act 2000.**		
10	**CONFIRM THAT YOU HAVE SUBMITTED THE DULY SIGNED INTEGRITY PACT DOCUMENT (Wherever Applicable)**		
11	**CONFIRM THAT YOU HAVE SHALL SUBMIT PERFORMANCE BANK GUARANTEE AS PER NIT IN THE EVENT OF PLACEMENT OF ORDER ON YOU (Wherever Applicable)**		
12	**CONFIRM THAT YOU HAVE SUBMITTED DOCUMENTS AS PER GENERAL QUALIFICATION CRITERIA**		
13	**Confirm that you have submitted Name and Full Address of Issuing Bank including Telephone, Fax Nos and Email id of branch manager where Bid security has been submitted as Bank Guarantee.**		

NOTE: Please fill up the greyed cells only.

Response Sheet **Annexure-FFF**

Tender No.	
Bidders Name	

Bidders Response Sheet

Sl No.	Description	Remarks
1	Name of Bidder	
2	Whether tender document purchased from OIL's offices.	
3	Place of Despatch	
4	Whether Freight charges have been included in your quoted prices	
5	Whether Insurance charges have been included in your quoted prices	
6	Make of quoted Product	
7	Offered Validity of Bid as per NIT	
8	Delivery Period in weeks from placement of order	
9	Complied to Standard Payment Terms of OIL or not.	
10	Bid Security Submitted (if applicable)	
11	Details of Bid Security Submitted to OIL (if applicable)	
	a) Bid Security Amount (In Rs):	
	b) Bid Security Valid upto:	
12	If Bid security submitted as Bank Guarantee, Name and Full Address of Issuing Bank including Telephone, Fax Nos and Email id of branch manager	
13	Bid Security if Not submitted reasons thereof	
14	Whether you shall submit Performance Security in the event of placement of order on you (if applicable)	
15	Integrity Pact Submitted (if applicable)	
16	Whether submitted documents in support of General Qualification criteria of NIT	
17	If bidder is Small scale unit whether you have quoted your own product	
18	If bidder is Small scale unit whether you are eligible for purchase preference (as per Govt guideliness)	
19	Whether filled up the bank details for online payment as per Annexure GGG	

NOTE: Please fill up the greyed cells only.

ANNEXURE - GGG

(TO BE FILLED UP BY ALL THE VENDOR IN THEIR OWN LETER HEAD)
(ALL FIELDS ARE MANDATORY)

Tender No.	**:……**
Name of Beneficiary	**:M/s.……**
Vendor Code	**:……...**
Address	**:...……**
	...……...
Phone No. (Land Line)	**:...……**
Mobile No.	**:...……**
E-mail address	**:...……**
Bank Account No. (Minimum	
Eleven Digit No.)	**:...……**
Bank Name	**:...……**
Branch	**:...……**
Complete Address of your	**:...……**
Bank	**:...……**
IFSC Code of your Bank	
a) RTGS	**:……...**
b) NEFT	**:……...**
PAN	**:……...**
VAT Registration No.	**:……...**
CST Registration No.	**:……...**
Service Tax Registration No.	**:……...**
Provident Fund Registration	**:……...**

I/We confirm and agree that all payments due to me/us from Oil India Limited can be remitted to our above mentioned account directly and we shall not hold Oil India Limited responsible if the amount due from Oil India Limited is remitted to wrong account due to incorrect details furnished by us.

……
Office Seal **Signature of Vendor**

Counter Signed by Banker:
Seal of Bank:

Enclosure: Self attested photocopies of the following documents-

1) **PAN Card**
2) **VAT Registration Certificate**
3) **Service Tax Registration**
4) **CST Registration**
5) **Provident Registration Certificate**
6) **Cancelled cheque of the bank account mentioned above (in original).**
7) **Bank Statement not older than 15 days on the date of submission.**