

Tender No. : DID3239L15/L3
Tender Date : 16.04.2014
Bid Closing On : 05.06.2014 at 13:00 hrs.(IST)
Bid Opening On : 05.06.2014 at 13:00 hrs.(IST)

Tender issued to following parties only:

Slno	V_Code	Vendor Name	City/Country
1	200009	BHARAT HEAVY ELECTRICALS LIMITED	BHOPAL
2	200310	ASSAM ELECTRICALS	TINSUKIA
3	200832	INDUSTRIAL EQUIPMENTS	GUWAHATI
4	201596	EVERLITE ENGINEERING INDUSTRIES	PANITOLA
5	201659	PURBANCHAL UDYOG	GUWAHATI
6	201667	RIGHILL ELECTRICS PVT LTD	BHOPAL
7	202289	U.K. ENTERPRISE	GUWAHATI
8	202973	TRADE & TECHNOLOGY PVT. LTD.	DIBRUGARH
9	203062	GLOCON	TINSUKIA
10	204244	PCE PROJECTS PVT.LTD.	KOLKATA
11	204567	K.D. ENGINEERING WORKS	DIBRUGARH
12	205062	POWER GRID ASSOCIATES	DULIAJAN

OIL INDIA LIMITED
(A Govt. of India Enterprise)
P.O. Duliajan-786602, Assam

E-mail:material@oilindia.in, Fax No.91-374-2800533

Tender No. & Date : DID3239L15/L3 16.04.2014

Bid Security Amount : INR 0.00 OR USD 0.00
(or equivalent Amount in any currency)

Bidding Type : Single Bid (Composite Bid)

Bid Closing On : 05.06.2014 at 13:00 hrs. (IST)
Bid Opening On : 05.06.2014 at 13:00 hrs. (IST)

Performance Guarantee : Not Applicable

OIL INDIA LIMITED invites Limited tenders for items detailed below:

Item No./ Mat. Code	Material Description	Quantity	UOM
10 0C000404	<u>PANEL</u> <u>SINGLE STAND ALONE VCB PANEL.</u> SINGLE STAND ALONE VCB PANEL, SOLIDLY GROUNDED, 11KV, INDOOR TYPE, FULLY FACTORY BUILT AND ASSEMBLED FOR DIRECT INSTALLATION. DESIGNED, MANUFACTURED AND TESTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:- <u>AS PER ANNEXURE -I ENCLOSED</u>	1	NO
	INSTALLATION & COMMISSIONING		
20	INSTALLATION & COMMISSIONING <u>GENERAL NOTES ON INSTALLATION & COMMISSIONING</u> 1.The installation and commissioning works should be done by the manufacturer or by the manufacturer's authorized party. 2.The contractor or any other third party on behalf of the contractor who shall execute the installation & commissioning jobs should possess valid electrical contractor license issued or recognized by the state government of Assam. In this regard, documentary evidence (Copy of contractor license) should be submitted along with the offer. 3.The jobs shall be carried out under the direct supervision of a person holding a certificate of competency and by a person holding a permit. In this regard, related documentary evidence (Copy of certificate of competency and of permit) should be produced prior to commencement of the installation & commissioning jobs. 4.The vendor should obtain permit to work from OIL's Engr.-in-charge before taking up installation and commissioning works. 5.All tools for installation and instruments for testing and commissioning should be arranged / provided by the vendor. 6.The party who executes the order will be responsible for intallation and commissioning of the Panel. 7. The Installation & Commssioning of the breakers should be considered as complete with the submission of the commissioning test records, operating & maintenance manuals, spares list of the panel, etc.	1	EA

to OIL.

TECHNICAL NOTES ON INSTALLATION AND COMMISSIONING:

(A) Installation:

1. The supplier should dispatch the materials to the OCS-2sub-station under OIL's operational Area, Moran. The bidder should install the panel in the specified substation of OIL. The installation work should be as per the installation manual supplied by the party.
2. OIL will supply & terminate H.T power cable with termination kit.
3. All other materials required for installation of the panel like earthing materials, etc will be supplied and done by the authorised person of the bidder.

(B)Pre-Commissioning Checks and Tests:

After completion of installation of various equipment at site, prior to commissioning the following checks and tests shall be carried out on equipment and systems. These shall be carried out in accordance with relevant standards, codes of practices published by the Bureau of Indian Standards or IEC standards and manufacturers recommendations.

1. Pre-Commissioning checks:

The following checks should be made on all equipment as applicable:

- i) Physical inspection for damages and external defects.
- ii) Check for proper fixing on foundation and tightness of foundation bolts.
- iii) Check for free movement of operating and draw out mechanisms of circuit breaker.
- iv) Check for proper tightness of cable, busbar and earth connections.
- v) Check for phase to phase and phase to earth electrical clearances.
- vi) Check for proper operation of electrical and mechanical interlock and manual tripping of breaker.
- vii) Check and calibrate meters, protective relays ,etc.

After completing the above checks, the following tests shall be carried out on different equipments.

2. Testings:

- i) Insulation resistance tests on power and control circuits:
- ii) CT polarity and ratio check
- iii) Relay operation by secondary injection method
- v) Functional check of the control circuit.
- vi) Functional check on the instruments and indication lamps
- vii) ON/OFF operation of the circuit breakers, manually and electrically in Test, Service & isolation positions.
- viii) Check on the functioning of the safety interlocks in the draw out mechanism and earth switch/earth truck.
- ix) Testing of closing and tripping coil operation at the minimum voltage specified.
- x) PT ratio test and IR value test.
- xi) Breaker functional Checks.

3. Commissioning of the equipment and tests associated with

commissioning are to be carried out by the authorized service engineer of the manufacturer.

4. The commissioning of the Relay for functions /protections should be done by the authorized engineer of the manufacturer.

5. Tools and Instruments: The testing & commissioning work should be performed using tools designed and approved for the purpose. The supplier should arrange all the related tools & instruments for commissioning of the item.

6. Codes and specifications: All electrical works for testing & commissioning should be carried out in compliances with latest Indian Standard specifications and Indian Electricity Acts and National Electric Code in force.

7. Miscellaneous:

a) The supplier has to submit 3 copies each of records of test report, checks made by him in bound form for panel. The commissioning shall be treated as complete after successful commissioning of the panel & submission of corrected drawings & test report as mentioned above.

b) All important tests/ checks such as injection testing, Insulation testing etc. shall be done in presence of Oil's Engineer-in- Charge or his representative.

c) The supplier should obtain the permit to work from Engineer in-Charge or respective Installation Managers before taking up work, if any.

d) No temporary electrical wiring should be done by the supplier during testing & commissioning without the permission of Engineer-in- Charge.

8. All the testing & commissioning jobs have to be done after getting approval from OIL.

9. Materials to be delivered at OIL INDIA LIMITED, MORAN, ASSAM. The bidder should clearly mention the delivery destination in the offer; otherwise offer will be rejected.

Item to be delivered and install at MORAN OCS -2, Bidder are requested to quote accordingly.

Standard Notes: (1) VALIDITY : Your offer must be valid for 75 days from the date of bid opening. Offer with inadequate validity will be rejected.

(2) The offer should be submitted in Duplicate.

(3) 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 a 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).

(4) In the event you authorize your dealer/stockist/channel partner to quote on your behalf, the dealer/stockist/channel partner while submitting bid should mention on the body of the envelope that they are submitting bid on your behalf.

In the event the dealer/stockist/channel partner do not mention the name of their OEM/principal on the body of the envelope, the offer shall be treated as unsolicited offer and will not be considered for opening.

The dealer/stockist/channel partner should take note of above while submitting bid on behalf of their OEM/principal.

(5) For order with F.O.R. Destination term, 100% payment against despatch documents will not be entertained. In this regards please refer payment terms in ANNEXURE-MM/TENDER/LP/01/06.

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

(7) Bidder must mention page no./nos. in every pages of their offer.

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

(9) Bidder should clearly mention their name and address on the outside of the envelope containing their offer.

(10) 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.

11) Materials to be delivered at OIL INDIA LIMITED, MORAN, ASSAM. The bidder should clearly mention the delivery destination in the offer; otherwise offer will be rejected.

Special Notes : 1. Bidder should submit all technical literatures, Technical catalogues, dimensional drawing, operation and maintenance manual should be submitted along with the offer, otherwise the offer will be rejected.

2. Material should be procured from the manufacturer or its authorised dealers only. In case of authorised dealer, valid dealership certificate should be enclosed along with the offer otherwise offer will not be considered for evaluation. The panel should be a make of reputed make like Crompton Greaves, Siemens, ABB, Areva, etc.

3. Technical catalogues, dimensional drawing, operation and maintenance manual should be submitted along with the offer, otherwise the offer will be rejected.

4. The construction of the panel should be as per IS-IS-13118, 14658, 2071, 3427 & IEC-60056 and compliance certificate as per NIT specifications should be submitted along with the offer.

5. The panel should be guaranteed for minimum one year period from the date of commissioning or 18 months from the date of supply. Guarantee certificate should be supplied along with the material.

6. The VCB panel should be of minimum 98% at site condition of 40 degree temperature in celcius.

7. Bidder has to fill up the DATA SHEET enclosed (Annexure-I) otherwise the offer will not be considered. Bidder can use their own data sheet but that must contain all informations desired by us as per enclosed annexure-1.

8. In case of order, 3(Three) sets of maintenance and operating manuals should be supplied along with the material and also to train our employees by manufacturer engineer about the maintenance and operating of material in OIL workshop.

9. Recommended Spares list (like coils, contacts, switch, plug, ferrule, interrupter etc) for next 5 years should be submitted in their offer along with vacuum circuit breaker. The same has to be provided by the party with VCB and the cost of spares to be included in item-10 against PI.11ASMR.005.01.

10. The materials to be inspected by OIL's engineers at main workshop before its dispatch. The drawing copy has also to be approved by OIL's engineers before start the job.

11. Packing should be adequate to avoid transit damage and ingress of water

12. Copy of valid electrical supervisor licence for the persons who will carry out the Installation & Commissioning job at site to be provided as this is essential as per Indian Electricity Rule.

13. The guidelines, terms & conditions of the installation & commissioning work should be as per the clauses mentioned under "GENERAL NOTES ON INSTALLATION & COMMISSIONING".

14. Party has to supply and install the DC Voltage source also for Breaker tripping/closing circuit and therefore should also quote along with their offer for technical scrutiny otherwise the offer will be rejected. FOR CONSTRAIN OF EXISTING ROOM SPACE WE DESIRE 24 V DC FOR TRIPPING AND CLOSING OF BREAKER. WE ALSO DESIRE THAT ALONG WITH CELLS CHARGER AND STAND FOR CELLS SHOULD ALSO BE SUPPLIED

15. No any kind of transportation and accommodation will be provided to party from OIL during the time of Installation & Commissioning of material at site.

B. 1. Offer should be complete in all respect to meet the technical specifications as per NIT. The Bidder should be panel manufacturer of 11KV, VCB panel or Authorized dealer of manufacturer of 11KV VCB panel. In case of authorized dealer, valid dealership certificate must be submitted along with bid.

2. The bidder should have experience of supplying, installation, testing and commissioning of Minimum 01 No. 11KV, Horizontal draw out & horizontal isolation type VCB panel in any Central Govt/ State Govt/ PSUs / Public Ltd. companies (in last) during last three years (from) as on bid (due) closing date.

3. The manufacturer should have designed, engineered, manufactured, tested and supplied (in) during last three years at least one set of 11KV, Horizontal draw out & horizontal isolation type VCB panel having 11KV, 630Amps, 50 KA, 3Sec and must have proven track record for operating satisfactorily at least a period of one year as on bid due date. In case the bidder is an authorised dealer, they should submit the credential of their manufacturer as mentioned.

4. The bidder should submit documentary evidence in support of their offer like purchase order/ works order with detailed scope of work and completion certificate, performance certificate along with bid for 2 & 3 above.

5. The offered VCBs panel must have been type tested on 11 kV, 630 A, VCB as per BIS-13118 from test house accredited by National Accreditation Board for testing and calibration laboratories (NABL) India. The bidder should have following Type test certificate for offered type VCB panel and copy of the same should be submitted with offer.

- a) Short time withstand current & peak current test
- b) Temperature rise test
- c) power frequency & Impulse voltage test.

6. VCB Trolley and Vacuum Interrupter should be of same make.

7. Party should mention the designed rating of control voltage.

8. Bidder should fill the following data sheet and the should be supported by suitable documents/literatures/ect.

ANNEXURE-IPANELSINGLE STAND ALONE VCB PANEL.

SINGLE STAND ALONE VCB PANEL, SOLIDLY GROUNDED, 11KV, INDOOR TYPE, FULLY FACTORY BUILT AND ASSEMBLED FOR DIRECT INSTALLATION. DESIGNED, MANUFACTURED AND TESTED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:-

IS-13118: Specification for High Voltage Alternating Current Circuit Breakers

IS- 14658: high voltage alternating current Circuit breakers # guide for short-circuit and switching test procedures for Metal-enclosed and dead tank Circuit breakers

IS-2071: high voltage test techniques

IS-3427: a.c. metal enclosed switchgear and controlgear for rated voltages above 1KV and up to and including 52 KV

IS- 2705: General specification of CT

IS-3156: General specification of PT

Or

IEC 62271-200: AC metal-enclosed switchgear and controlgear for rated voltages above 11kV and up to and including 52 kV

IEC 62271-102: AC disconnectors and earthing switches

IEC 60694: Common clauses for high-voltage switchgear and controlgear

IEC 62271-200: High-voltage AC circuit breakers

IEC 60185 :Current transformer

IEC 60186 :Voltage transformer

IEC 60801: Electromagnetic compatibility for industrial process measurement and control equipment

IEC 60056: High-voltage alternating-current circuit-breakers

1.0 GENERAL CHARACTERISTICS:

(I).Architecture: Metalclad, LSC2B category, air insulated as per IEC 62271-200 or relevant standards.

(II). Protection Degree: IP4X

(III).Normal Service conditions: Indoor Equipment

(IV).Operating Temperature:

Maximum: 50 Degree Celcius

Avg over 24 hrs: 40 degree Celcius

(V). Site condition:

a) Maximum Ambient air temperature : 40 ° C

b) Minimum Ambient air temperature : 2.5 ° C

c) Maximum humidity at site (at 40 ° C) : 98 %

d) Surrounding atmospheric condition : Humid

e) Site altitude : 150 mtr.

2.0 ELECTRICAL CHARACTERISTICS:

(I).Service voltage: 11KV

(II).Insulation level:

Rated voltage 12KV

Rated insulation level at power frequency: 28 KV rms

Peak withstand voltage (1.2 / 50 μ s): 75 kV peak

Rated frequency (power frequency): 50

(III).Short time withstand current: 25KA

(IV).Peak withstand current: 62.5KA peak

(V). Rated continuous current: 630 Amps

(VI).Type of circuit-breaker: Vacuum

Rated breaking capacity: 25 KA rms.

3 sec withstand current: 25 kA

Rated making capacity: 62.5 kA peak

(VII). Auxiliary voltages:

For HV circuit-breaker charging motor: 230 V AC

For protection relays: 24 V DC

For anti-condensation resistances (panel heater):230 V AC

3.0 PANEL:Free standing, Floor mounted, metal clad, fully compartmentalized draw-out type.

4.0 CIRCUIT BREAKER:

Vacuum restrike free, trip free, stored energy operated and with Mechanical anti-pumping features. Only Horizontal Isolation/drawout cassette type vacuum circuit breaker is acceptable.

5.0 RATING:

630 Amps

6.0 DESIGN AND CONSTRUCTIONAL FEATURES:

Single stand alone panel Circuit Breakers should have the following features:-

a). Height and Width of the Panel:

Height should not exceed 2400 mm

Width should not exceed 650mm

b). Insulators:Insulators should be track-resistant, high strength, non-hygroscopic, non-combustible type. Cast epoxy insulators supports for cable termination links designed to withstand full short circuit current at specified fault level for 3 seconds should be provided.

c). Construction:

(c.i) High voltage switchboard should be metal enclosed fully drawout, free standing, floor mounted,conforming to LSC2B category, suitable for indoor installation.

(c.ii)The switchgear assembly should be rodent and vermin proof and degree of protection should not be less than IP4X.

(c.iii)The frame/covers of vertical panel should be of Galvanised Iron sheets of atleast 3.0 mm thickness. Wherever required stiffeners should be provided to increase stiffness of large size doors & covers.

(c.iv) Panel should have cable live indication for all 3 phases, when the cable are energized.

(c.v) The panel should be Internal Arc proof & should have been Type tested as per Pressure relief device to vent out safely the gases produced in case of a fault.

(c.vi) Breaker truck should have a secure locking in SERVICE position so that they are not displaced during a short circuit. Breaker should have three position Service/Test and drawout. Automatic metallic safety shutters should be provided to ensure the inaccessibility of all live parts after breaker is withdrawn. The breaker trolley should remain inside the cubicle even in the test position. There should be overall door for the breaker compartment, and should be lockable. All necessary interlock should be provided to prevent faulty operation

- Plugging in or drawing out of closed breaker.

- Pulling out of auxiliary circuit plug with breaker in service position.

- Pushing in breaker to the service position, with auxiliary circuit plug not in position.

- Opening of circuit breaker compartment door when CB is in SERVICE position.

(c.vii) All hardware should be corrosion resistant and should be made by zinc-passivated.

(c.viii) Current ratings of circuit breaker, CT's, PT's, etc. should be sufficient for carrying the connected load currents without exceeding the permissible temperature limits or reduction in service life.

(c.ix) Suitable trolley arrangement should be provided.

(c.x) Internal earthbus should be provided which has a capacity to withstand short circuit currents of 13.1kA and all enclosures should be connected to this bus. Minimum size of earth bus used should be 30x6mm². All doors & movable parts should be connected to earth bus with flexible copper connection. All non-metallic parts of the equipment and component should be earthed. Provision should be made to connect earthing busbar to plant earthing grid at two level.

(c.xi) The front door should have glass window to facilitate observation of mechanical ON/OFF indication and operation counter.

(c.xii) The draw out truck should have the following positions

a) Isolated b) Test c) Service

(c.xiii) Cable entry should be from bottom side

(c.xiv) HRC fuse protection on HT and LT side of PT should be provided

(c.xiv) The panel should be provided with 2(two nos) space heaters and thermostats of suitable rating for heater temperature monitoring along with protective HRC fuses and individual ON/OFF switch.

(c.xv) Lifting hooks should be provided for the panel

(c.xvi) The markings and identifications of conductors, apparatus terminals should be as per IS 5578 & IS 11353 or equivalent IEC.

7. OPERATIONAL REQUIREMENT:

7.01. Breaker panel should be provided with the following devices

for control, indication and inter locking :

a) Spring return to neutral type control switch

b) Stay- put type local/remote selector switches.

c) 'On', 'Off', 'Spring charged' and 'Control Supply healthy', 'indicating lamps', The lamps should be clamps shall be high intensity clustered LED type.

d) Thermostatically controlled space heater with switch, illumination and power plug point.

7.02. The circuit breaker should meet the following requirements:-

a) Vacuum restrike free, trip free, stored energy operated and with Mechanical anti-pumping features. Only Horizontal Isolation/drawout cassette type vacuum circuit breaker is acceptable.

b) Type test report should be furnished along with bid for 100 nos operations at 13.1 KA as IS 2071 or equivalent IEC

c) Should have an Operation duty O -0.3 min - CO - 3 min - CO.

d) Closing coils should operate satisfactorily in the control voltage range of 85 - 110% and tripping coil should operate satisfactorily in the control voltage range of 70% - 110%. Closing coil & tripping coil should be rated for continuous operating voltage.

f) Testing of circuit breaker should be possible in isolated position by keeping the control plug connected.

g) Only motor wound closing spring charging arrangement is acceptable.

h) Breaker truck should have Service - Isolated - Withdrawn Position.

k) Service & test position indication should be provided on panel through additional lamps.

l) PT should be mounted on a separate truck and should house in a separate compartment with safety shutters. PT should be epoxy cast type & as per IS-3156. PT should be horizontal draw out type. Ratio 11kV/110V (phase to phase), 150VA/phase & protected with HRC fuse on both HT & LT side. PT should be horizontally draw out type and mounted on the top of the panel.

m) The circuit breaker should use AMF (Axial Magnetic Field) type Vacuum interrupters.

8.0 RELAY AND METERS:

- (I) All relays should conform to all requirements as per IEC255 and shall be suitable for operation from CT and VT secondaries as required
- (II) Protective relays should be of numerical multifunction relay with self monitoring features
- (III) All Protection Relays must be Numerical Multifunction Type & must meet all the IEC Standards & should be UL/CE certified.
- (IV) The Relay range should be designed to accommodate all types of control power supply voltages: 24V DC. The CT / PT ratios (1A/5A etc) should be site selectable. It should be possible to disconnect the CT connectors without open circuiting main CTs. **FOR CONSTRAIN OF EXISTING ROOM SPACE WE DESIRE 24 V DC FOR TRIPING AND CLOSING OF BREAKER. WE ALSO DESIRE THAT ALONG WITH CELLS CHARGER AND STAND FOR CELLS SHOULD ALSO BE SUPPLIED.**
- (V) The Relay should include a 3 Line Backlit LCD display & should be Password Protected.
- (VI) The Relay shall have at least 10 logic/Digital inputs and 8 relay outputs The Relay should have disturbance (Waveform) recording (in COMTRADE Format).
- (VII) The Relay should display atleast last Trip Record with Date & Time Stamp. Fault recorder, minimum last 10 faults
- (VIII) The Relay should have Front RS232 for local parameterization & RS485 Modbus port at rear.
- (IX) Protection:
- a) The Relay should contain all the necessary protections for the specific application with wide Setting Ranges:
- Feeder/Transformer protections:
- 50/51 Phase overcurrent 3 Phase
 - 50N/51N Earth fault (or neutral)
 - 46 Unbalance / negative sequence
- (b) Phase overcurrent and earth fault protection should have an adjustable timer hold to allow restriking faults detection.
- (c) Earth fault protection shall integrate a harmonic 2 restraint, which can be inhibited or activated.
- (d) The Relay should have atleast two setting Groups.
- (e) All Alarm/Fault Messages should be in Plain English Text on the Display.

(X) Metering:

- (a) Each Relay should include the Measurements needed for operation and commissioning, i.e. at least the following depending on connected Analog (CT/PT) Inputs-
- RMS 3-phase current & Residual current measurement
 - Measurement of fault current broken in each phase
- (b) All meters should conform to all requirements as per IEC-62053/IS-1248 and should be flush mounted suitable for operation from CT and VT secondaries as required. Meters can be digital multi function type.

9.0 CONTROL SUPPLY:

Panel should be provided with necessary arrangement for receiving, isolating, distributing and fusing of 230V AC for panel lamps and spring charging circuits and 24V DC supplies for various control. DC Control Supply arrangement shall be as per relevant tender drawings.

The wiring should be carried out using multi-strand copper conductor super flexible PVC insulated wires of 650/1100V Grade for AC Power, DC Control and CT circuits. CT wiring should be made of 2.5mm² PVC insulated wires and control wiring should be made of 1.5mm² PVC insulated wires. All wiring should be grey/black colored wires as per the manufacturers standard. Each wire should be identified at both ends by correctly sized PVC ferrules. Shorting links/suitable shorting arrangement shall be provided for shorting CT secondary.

Control cable shall enter switchgear from bottom. It should be possible to have control cable entry from both right & left corner at the front of the panel without cutting standard part of the panel. Supporting facility should be provided for clamping the control cable.

10% of spare terminals should be provided on each terminal block.

Necessary hardware should be provided in the switchgear panel like coupling relays, auxiliary relays, transducers etc. to effect interlocks, exchange of information status and exercise control from remote.

10.0 INSTRUMENT TRANSFORMERS:

CTs and VTs should be provided for protection and metering and should be cast-resin encapsulated type with insulation class 'E' or better. VTs shall have suitable HRC current limiting fuses on both primary and secondary sides, under voltage relays, timers, etc. for motor tripping and remote annunciation on supply failure. Switchgear section shall have a three phase VT.

	CTs	VTs
Protection -	5P 10	3P
Metering -	1.0	1.0

CT's & VT's should have accuracy class of 0.5, wherever energy meter of 0.5 classes are connected to these CT's & VT's.

11.0 SAFETY REQUIREMENT:

The switchgears should be designed to offer adequate level of safety to operating/ maintenance personnel. Means should be provided to prevent access to the live part to avoid accidents during service as well as maintenance period. Bidder should bring out the safety means provided to achieve above. A detailed instruction plate suitable for wall mounting should be provided for switch gear room describing various safe operating procedure / safety precautions for safe operation and maintenance of switchgear. Rubber mats should be provided in front of panel. A clearly visible warning label "Isolate elsewhere before earthing" should be provided on shutters of incoming and other connections which could be energised from other end.

12.0 TYPE TESTS:

The following test report should be submitted along with the panel:-

- (i). Verification of rated making and breaking capacities
- (ii) Short time withstand test of panel.
- (iii) Power frequency test on the contactor mounted in side panel.
- (iv) Lightning impulse voltage withstand test of the contractor mounted in side panel.
- (v) Internal Arc test
- (vi). Relay including primary and secondary injection test should be carried out at the manufacturers works and certificate in this regards should be provided at the time of supply. This test needs to be carried out while commissioning at site also. Party shall have to carry injection test kit for primary and secondary injection test.

13. PANEL ACCESSORIES:-

- a) Digital ammeter 96 x 96 mm size (or suitable size), 0-200A for line current measurement.
Make: AE /CONZERV/Equivalent
- b) Digital voltmeter 96 x 96 mm size(or suitable size), scale 0-15kV for line Voltage measurement.
Make: AE/ CONZERV/Equivalent
- c) Ammeter Selector switch - 1 no
- d) Voltmeter Selector switch - 1 no
- e) Microprocessor based digital meter for measurement of the following electrical parameter like Frequency, KVA,KVAr,PF,KWH,
KVArh - 1No.Make- AE/ CONZERV/Equivalent

- f) Breaker ON/OFF switch - 1 no
- g) Trip circuit healthy push button.
- h) LED type Indication lamp for:
 - i) CB Close, ii) CB open, iii) Trip on fault,
 - iv) Trip circuit healthy, v) Spring charged.
- i) Closing and tripping:
 - i) Manually:Spring charging, closing and tripping.
 - ii) Electrically:Spring charging, closing and shunt tripping.
- (j) Numeric relay should have following features:
 - 50/51 Phase overcurrent 3 Phase
 - 50N/51N Earth fault (or neutral)
 - 46 Unbalance / negative sequence
 - Fault recorder, minimum last 10 faults

ANNEXURE- I DATA SHEET
(To be filled up by the bidder)

A. 11KV SWITCHGEAR PANEL

1. Name of manufacturer :
2. Manufacturer's
 - Type No. :
 - Model No. :
3. Panel type :
4. Degree of protection :
5. Fully Type tested : Yes/No.
6. Type tested at :
 - (Specify lab/Institution where test was carried out)
7. Conforms to (Standards):
 - a) IEC :
 - b) BIS :
 - c) Others :
8. Rated Insulation:
 - a) Min. withstands voltage :
 - b) Impulse voltage withstand (dry) :
9. General details of Panels
 - a) Extensible : Yes/No.
 - b) Compartmentalized : Yes/No
 - c) No. of compartments :
 - (To be specified)
 - d) Names of the compartments:
 - (To be specified)
10. Material of internal partitions :
11. Thickness of Panel Sheet metal :
12. Busbars
 - a) Busbar material :
 - b) Busbar shape :
 - c) Busbar size :
 - d) Busbar insulation :
 - e) Busbar rating (Amps) :
 - f) Busbar Spouts insulation material :
13. Busbar support insulation :

Type & materials**14. Guaranteed maintenance free life of**

- a) Panels :
- b) Circuit breaker :

**15. Operational safety interlocks provided:
(To be specified)****16. Earthing facilities provided for**

- a) Busbars : Yes/No
- b) Circuit/Cable : Yes/No.

**17. Circuit breaker cubicle with
front plate/door pressure tested
for internal are faults. : Yes/No****18. Panel Wiring :**

- a) Voltage rating :
- b) Insulation type & material :
- c) Wire size :

19. ENVIRONMENTAL CONDITIONS

- a) Maximum Ambient air temperature :
- b) Minimum Ambient air temperature :
- c) Maximum humidity at site (at 40 ° C) :
- d) Surrounding atmospheric condition :

20. Confirmed insulation provided is suitable for above environmental conditions: Yes/No**B. VACUUM CIRCUIT BREAKER****(Information to be given IS: 13118: 1991 Clause 9.012)****1) Rated Values and Characteristics**

- a) Number of Poles :
- b) Class : Indoor/Outdoor
Temperature :
Ice coating :
- c) Rated voltage :
- d) Rated insulation level :
- e) Rated frequency :
- f) Rated normal current :
- g) Rated line charging :
breaking current
- h) Rated cable charging :
breaking current
- i) Rated small inductive:
breaking current
- j) Rated Short Circuit :
breaking current
- k) First pole to clear factor:
- l) Rated Transient Recovery voltage :
for terminal faults
- m) Rated characteristics for short :
line faults
- n) Rated Short Circuit making :
current.
- o) Rated Operating sequence :
- p) Rated duration of short circuit :
- q) Rated out of phase breaking current :
- r) Rated opening time :

- s) Rated break time. :
- t) Rated closing time :
- u) Frequency of operation :

2. Characteristics of the operating mechanism of CB and associated equipment in particular:

- a) Method of operation :
- b) Number and type of spares :
auxiliary switches.
- c) Rated supply voltage power and rated supply frequency :
- d) Panel, Light space heater :
- e) Closing devices - Normal voltage :
Min. voltage :
Max. voltage :
- f) Shunt trip coil - Normal voltage :
Min. voltage :
Max. voltage :
- g) Series trip coil- Normal voltage :
Min. voltage :
Max. voltage :
- h) Indication supply :

3. Bushings - Material :

C. CURRENT TRANSFORMERS OF SWITCHGEAR PANEL :

1. Feeder panel DC/EF (Protection) CT's

- i) Make :
- ii) Type :
- iii) Class :
- iv) Ratio :
- v) Burden (VA) :

2. Panel Metering CT's

- i) Make :
- ii) Type :
- iii) Class :
- iv) Ratio :
- v) Burden (VA) :

3: Panel Protection CT's

- i) Make :
- ii) Type :
- iii) Class :
- iv) Ratio :
- v) No. of cores (Secondary):
- vi) Burden (VA) :

D. POTENTIAL TRANSFORMERS OF SWITCHGEAR PANEL :

1. Incoming Panel PT :

- i) Make :
- ii) Type :
- iii) No. of phases :
- iv) Ratio :
- v) Class :
- vi) Burden (VA) :
- vii) Location/Mounted on :
- viii) Fixed/Withdrawable :
- ix) Primary side protection :

x) Secondary side protection:

E. CONTROL CABLES :

- a) Make :
- b) Voltage Grade :
- c) Insulation :
- d) Conductor Material :
- e) Size (Sq. mm. per core):

F. AMMETER :

- a) Make :
- b) Class :
- c) Ratio :

G. VOLTMETER :

- a) Make :
- b) Class :
- c) Range :

H. SELECTOR SWITCHES :

- a) Make :
- b) Type :

I. CONTROL SWITCHES :

- a) Make :
- b) Type :

J. CONTROL SUPPLY MODULE (POWER PACK)

- a) PIV of 3 phase rectifier.
- b) Provided with surge suppressor - Yes/No.
- c) Provided with HRC fuse in incoming - Yes/No.

K.PROTECTIVE RELAY :O/C AND E/F PROTECTION RELAY.

- a) Type of Relay :
- b) Make of Relay :
- c) Model :

L. Make of VCB trolley :

Vacuum Interrupter :

M. Battery Supply:

- a). Yes/No
- b). No.of cells-
- c). Charger supplied
Yes/No.
Capacity of charger: