

**BHARAT COKING COAL LIMITED**

GRAM : KOKINGKOL

( A Subsidiary of Coal India Limited )

(Phone No. 0326 - 2230181

Office of the Chief General Manager(MM)

(Fax No. 0326 -2230183)

Koyla Bhawan : Koyla Nagar

Dhanbad : 826 005

Ref. No. BCCL/PUR/614029/COILS &amp; COMMUTATORS/14-15/233

dtd. 11.02.2015

**PURCHASE ORDER**  
**BY REGD./SPEED POST**

To,	Vender code :
M/s. R Traders	1/13/M/X/135
OM Bhawan	Vendor Type: Mfr.
P.O. Dhansar	PAN No. : AAGFR6353M
Dhanbad 828106	

Sub: Supply of Coils and Commutators for Motor/ Generators of Excavators  
Ref: i) Our tender no. BCCL/Pur/614029/Coils and Commutators /14-15/43.  
Cover-I opened on 14.08.14 and Price bid opened on 19.11.14  
ii) Your On-Line Offer Id No 7661 dtd 08.08.2014

Dear Sirs,

With reference to above, we, for and on behalf of BCCL, hereby place order for Supply of Coils and Commutators for Motor/ Generators of Excavators at the following specification, price, value and terms & conditions:

NIT SI no	M/s R Traders	Description	DRAWING REFERANCE	Qty Sets	UM	Basic price (Rs)	Ext value (Rs)
1	ARMATURE	COIL FOR 54 KW DC CROWD / PROPEL MOTOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC:15501987266	KIRLOSKAR ELECTRIC CO. LTD. MAKE MOTOR FRAME NO. KMDC 808 Sp1	5.00	SET (1 set = 43 coils)	30025.00	150125.00
2	ARMATURE	COIL FOR 54 KW DC CROWD / PROPEL MOTOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL	BHEL DRAWING NO. 1414038040	10.00	SET (1 set = 35 coils)	32620.00	326200.00

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	MC: 15501480592						
3	ARMATURE COIL FOR 50 KW DC CROWD GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501975131	KIRLOSOKAR ELECTRIC CO. LTD. MAKE MOTOR FRAME NO. KMDC 810 Spl	3.00	SET (1 set = 37 coils)	30500.00	91500.00	
4	ARMATURE COIL FOR 42 KW DC CROWD GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501975126	BHEL DRAWING NO. 34134038016	3.00	SET (1 set = 41 coils)	31035.00	93105.00	
5	ARMATURE COIL FOR 15 KW DC EXCITER GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501987234	KIRLOSOKAR ELECTRIC CO. LTD. MAKE MOTOR FRAME NO. DC 280/E	4.00	SET (1 set = 37coils)	16924.00	67696.00	
6	MAINPOLE COIL FOR 54 KW DC CROWD / PROPEL MOTOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501972105	BHEL DRAWING NO. 24113238032	10.00	SET (1 set = 04 coils)	73800.00	738000.00	
8	COMPOLE COIL FOR 54 KW DC CROWD / PROPEL MOTOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501975266	BHEL DRAWING NO. 24113238062	10.00	SET (1 set = 04 coils)	22960.00	229600.00	
9	COMPOLE COIL FOR 54 KW DC CROWD / PROPEL MOTOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M	KIRLOSOKAR ELECTRIC CO. LTD. MAKE MOTOR FRAME NO. KMDC 808 Spl	6.00	SET (1 set = 04 coils)	24948.00	149688.00	

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	SHOVEL MC: 15501975278					
10	COMPOLE COIL FOR 130HP DC CROWD / SWING MOTOR OF BE195B / MARION 182M 10Cu.M SHOVEL MC: 15557995543	GE make motor type MDV808 / MD808		4.00 SET (1 set = 04 coils)	30965.00	123860.00
12	COMMUTATOR FOR 54 KW DC CROWD / PROPEL MOTOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL NO. OF SEGMENT - 139 MC: 15501148146	BHEL DRAWING NO. 24114238014		3.00 NO	36120.00	108360.00
13	COMPOLE COIL FOR 130HP DC CROWD / SWING MOTOR OF BE195B / MARION 182M 10Cu.M SHOVEL MC: 15557995563	BHEL make motor type MD 1808E/MDV 1808E		2.00 SET (1 set = 04 coils)	30294.00	60588.00
15	MAIN POLE COIL FOR 42 KW DC CROWD GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15504993718	BHEL DRAWING NO. 24133238067 (SELF), 24133238068 (SEP)		1.00 SET (1 set = 04 coils)	25000.00	25000.00
16	COMPOLE COIL FOR 42 KW DC CROWD GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501950973	BHEL DRAWING NO. 24133238070(COMPOLE), 34133238018(STAB)		3.00 SET (1 set = 04 coils)	23338.00	70014.00
17	COMPOLE COIL FOR 50 KW DC CROWD GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15557995587	KIRLOSKAR ELECTRIC CO. LTD. MAKE GENERATOR FRAME NO. KMDC 810 Spl		2.00 SET (1 set = 04 coils)	34270.00	68540.00

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18	COMPOLE COIL FOR 132 KW DC SWING PROPEL GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501972164	KIRLOSKAR ELECTRIC CO. LTD. MAKE GENERATOR FRAME NO. KMDC 814 Spl	2.00	SET (1 set = 04 coils)	35640.00	71280.00
20	MAIN POLE COIL FOR 100 KW DC SWING PROPEL GENERATOR OF EKG / EQC 4.6 Cu.M / 5.0 Cu.M SHOVEL MC: 15501975199	BHEL DRAWING NO. 24133238061(COMPOLE), 34133238014(STAB)	2.00	SET (1 set = 04 coils)	82080.00	164160.00
						2537716.00
					VAT @5%	126885.80
					Total	26,64,601.80

**Rounded off to Rs 26,64,601.00**

**(Rupees Twenty six lakh sixty four thousand six hundred and one only)**

**Terms and Conditions:**

01	Price	Firm till execution of the contract & F O R Destination basis.
02.	Excise Duty & Ed cess	ED Not applicable
03	Sales Tax	Extra as applicable. Present rate is VAT@5%
04	Packaging & forwarding	NIL
05	Fr. & Ins.	NIL
06	Payment Term	100% payment within 21days from the date of receipt and acceptance of materials or date of submission of bill whichever is later at the consignee end.
07	Delivery	The delivery should start within 02 months from the date of receipt of order and it should be completed within 06 months thereafter.
08	Guarantee/ Warranty	18 months from the delivery or 12 months from the date of fitment whichever is earlier against faulty materials or bad workmanship.
09	Price Fall & L.D. Clause	Applicable as Annexure-I(enclosed)
10	Logo /Identification mark	Supplied items should have either embossing or print indicating manufacturers name / logo & item description. Vendor will have to accept this condition in their technical bid. If embossing or printing is not possible ten proper tag to be provided for identification
11	After Sales Service	You will extend after sales service to the end user.
12.	Fitment Guarantee	The offered items should be suitable for applications in mining conditions & suitable for fitment to the subject accessories/ equipment/machine without any modification / alteration.
13	Integrity Pact:	You have signed Integrity pact issued with NIT. Shri Naresh Chaturvedi, IAS (Retd.), CL-14, Sector-II, Salt lake, Kolkata- 700 091, will be independent external monitor against this tender/ contract.
14	Consignee	The Depot Officer. SWS Store. BCGCL, Dhanbad, Jharkhand.

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15	Paying Authority	GM(F) MM, Purchase Finance Dept., Bharat Coking Coal Ltd., Koyla Bhawan, Koyla Nagar, Dhanbad.
16	Inspection	Final inspection by consignee end by GM (Excv) or his authorised representative.
17	Mode of Despatch	By Road on freight paid basis.
18	Force Majeure Clause	If the execution of the contract/supply order is delayed beyond the period stipulated in the contract / supply order as a result of out-break of hostilities, declaration of an embargo / curfew or blockade or fire, flood, acts of nature or any other contingency beyond the supplier's control due to act of God then BCCCL may allow such additional time by extending the delivery period, as it considers to be justified by the circumstances of the case and its decision shall be final. If and when additional time is granted by BCCCL the contract/supply order shall be read and understood as if it had contained from its inception the delivery date as extended. Further this clause state that: a) The successful bidder will, in the event of his having to resort to this clause by a registered letter duly certified by the local Chamber of Commerce or statutory authority, the beginning and end of the causes of the delay, within fifteen days of the occurrence and cessation of such Force Majeure Conditions. In the event of delay lasting out of Force Majeure, BCCCL will reserve the right to cancel the contract and provisions governing termination of contract, as stated in the bid documents will apply. b) For delays arising out of Force Majeure , the bidder will not claim extension in completion date for a period exceeding the period of delay attributable to the causes of Force Majeure and neither BCCCL nor the bidder shall be liable to pay extra costs provided it is mutually established that Force Majeure Conditions did actually exists. c) If any of the force majeure conditions exists in the place of operation of the bidder even at the time of submission of bid, he will categorically specify them in his bid and state whether they have been taken into consideration in their quotations.
19	Security Deposit	Not applicable.
20	Price Certification	You will certify on their bills that the prices charged to BCCCL is not higher than as charged to other Govt. Under Taking / Deptt and others organisations
21	Jurisdiction	Any disputes will have jurisdiction of Dhanbad Court & Jharkhand High court only
22	Inspection and Test clause	i) The purchaser or its authorized representative shall have the right to inspect and/or to test the goods to confirm their conformity to the contract. ii) The purchaser shall notify the supplier in writing of the identity of any representative retained for these purposes. iii) If the inspections and tests is conducted on the premises of the supplier or its subcontractor(s) at point of delivery and/or at the goods final destination when conducted on the premises of the supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the purchaser. iv) Should any inspected or tested Goods fail to conform to the specifications, the purchaser may reject them and the supplier shall replace the rejected goods and make all alternatives necessary to meet specification requirements free of cost to the Purchaser. v) The materials will be inspected on arrival at site by the consignee, which will be considered as final. This shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative's i.e. third party prior to

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		the dispatch of the Goods. vi) Nothing in these documents shall in any way release the supplier from any warranty or other obligations under this contract.
23	Submission of Bills	100% value of bill duly stamped & pre-receipted Bill in 6 copies as per terms of the order should be submitted for payment to the paying authority through consignee. Bill should be submitted along with challan, packing list if any, guarantee/warranty certificate, fitment certificate, and any other document specified in the order.
24	Performance Bank Guarantee	The successful tenderer shall submit a Performance Guarantee equivalent to 10% of the total value of the supply order / contract (by adding Excise Duty and Sales Tax etc to the FOR destination price of the items ordered. The performance guarantee shall be submitted in the form of a Bank Guarantee issued by a scheduled bank/Nationalise Bank in India in the format attached as <b>Annexure-III</b> (on a non judicial stamp paper of value Rs.250.00 only). This Bank Guarantee shall be valid for the period for 30 months from the date of first supply. This Performance Guarantee shall be as coverage towards the supplier's performance against the contract performance of the Contract / Supply Order. No payment will be made without submission of Performance Bank Guarantee. If delivery period of supply is extended by any reason, the validity of BG would be extended correspondingly.
25	Packing & test certificate	The items should be supplied with proper packing for safe storage before fitment without deterioration of insulation conditions. Three copies of test certificates as per requirement shall be produced along with the supplied materials.

**ALL OTHER REMAINING COMMERCIAL TERMS & CONDITIONS AND TECHNICAL SPECIFICATIONS ALONG WITH SCOPE OF SUPPLY WILL STRICTLY BE AS PER OUR NOTICE INVITING TENDER AS CONFIRMED IN YOUR OFFER AND YOUR SUBSEQUENT LETTERS**

This contract is concluded with the issuance of this order. You are requested to kindly acknowledge receipt and acceptance of order within 15 days from date of issue of order. In case no reply is received, it will be presumed that the order has been accepted by you for execution.


This order is placed against Indent No.: BCCL/EXC/SWS/INDENT/2014/MB/19 dtd 28.03.2014.  
IR no. 614029 dtd 19.05.2014.


Budget Certification No.: BCCL/HQ/Pur-Fin/Store Budget/Advance Action/2014-15/SWS/51 dt 06.05.14 for Rs 30,07,310.00 & FC no 126 dt 30.01.15 for Rs 31,75,213.00 and eBC no. 26 & eFC no. 22.

Encl: Annexure-I

Annexure-II: Technical Specifications

Yours faithfully,  
For & on behalf of Bharat Coking Coal Ltd.

  
(Saqib Afrab)  
Asst. Manager (MM)

  
(A.D. Santhish)  
Chief Manager (MM)

Copy to:-

1. General Manager (Excv.), Koyla Bhavan
2. Depot Officer, SWS Stores, BCCL, Dhanbad
3. GM(F/MM), Purchase Fin Deptt. Koyla Bhavan.
4. ✓ Tech. Cell, MM Divn.
5. Master copy / Office copy
6. External Independent Monitor: Shri Naresh Chaturvedi, IAS (Retd.), CL-14, Sector-II, Salt lake, Kolkata-700 091

#### **ANNEXURE-1**

#### **PENALTY FOR FAILURE TO SUPPLY IN TIME**

The time and date of delivery of stores stipulated in Purchase order shall be deemed to be of the essence of the contract and delivery of the stores must be completed by the date specified. No materials should be supplied beyond the specified delivery period, unless specific approval has been obtained from the purchaser.

In the event of failure to delivery or dispatch the stores within the stipulated date/ period in accordance with the samples and/or specification mentioned is the supply order, and in the event of breach of any terms and conditions mentioned in the supply order. Bharat Coking Coal Limited reserves the right:

- a) To recover from successful tenderer, as agreed liquidated damages, a sum not less than 0.5% (half percentage) of the price of the stores which successful tenderer has not been able to supply (for this purpose part of a unit supplied will not be considered) as aforesaid for each week or part of a week during which the delivery of such stores may be in arrears limited to 10%. Where felt necessary the limit of 10% can be increased to 15% at the discretion of Head of the Materials Management Division.
  - b) To purchase elsewhere, after due notice to the successful tenderer on the account and at the risk of the defaulting supplier the stores not supplied or others of a similar description without cancelling the supply order in respect of consignment not yet due for supply or
  - c) To cancel the supply order or a portion thereof, and if so desired to purchase the store at the risk and cost of the defaulting supplier and also
  - d) To extend the period of delivery with or without penalty as may be considered fit and proper. The penalty, if imposed shall not be more than the agreed liquidated damages referred to in clause (a) above.
  - e) To encash any Bank guarantee which is available for recovery of the penalty or
  - f) To forfeit the security deposit full or in part.
  - g) Whenever under the contract a sum of money is recoverable from and payable by the supplier, BCCL shall be entitled to recover such sum by appropriating, in part or whole by deducting any sum or which at any time thereafter may be due to the successful tenderer in this or any other contract with Bharat Coking Coal Ltd. or any subsidiary of Coal India Ltd. Should this sum be not sufficient to cover the full amount recoverable, the successful tenderer shall pay BCCL on demand the remaining amount. The supplier shall not be entitled to any gain under this clause.
- The supplier must confirm the acceptance of this Penalty clause, which will not be altered.

#### **PRICE FAILI CLAUSE.**

- i) The prices charged for the stores supplied under the contract by the supplier shall in no event exceed the lowest price at which the supplier sells the stores of identical description to any other organization till validity of the contract.
- ii) If at any time during the said period the supplier reduces the sale price of such stores or sells such stores to any other organization at a price lower than the price chargeable under this contract, the supplier shall forthwith notify such reduction or sale to the consignee concerned under intimation to CGM (MM), Bharat Coking Coal Limited, Commercial Block, Level -III, Koyla Bhawan, Koyla Nagar, Dhanbad and the price payable under the contract for the stores supplied after the date of coming into force of such reduction or sale, shall stand correspondingly reduced. The above stipulated will not, however apply to exports by the supplier.

**ANNEXURE IV**  
**FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT**

M/s. Bharat Coking Coal Ltd.  
Koyla Bhawan  
Koyla Nagar  
Dhanbad – 826005

In consideration of M/s Bharat Coking Coal Ltd. having its office at Koyla Bhawan, Koyla Nagar, Dhanbad hereinafter called "the Purchaser" (which expression shall unless repugnant to the subject or context including its successors and assigns) having agreed under the terms and condition of Contract No. .... dated ..... made between M/s ..... a Company having its office at ..... hereinafter called the "said Contract" to accept a Deed of Guarantee as herein provided for Rs. .... in lieu of the security deposit to be made by the supplier for their due fulfillment of the terms contained in the said Contract, we, the ..... Bank Limited ( hereinafter referred to as the said Bank having its office at ..... do hereby undertake and agree to indemnify and keep indemnified that Purchaser from time to time the extent of Rs. ....(Rupees ; ..... ) against any loss. Damage caused charges and expenses caused to or suffered by or that may be caused to suffered by Purchaser by reason of any breach or breaches by the said supplier or any of the terms and conditions contained in the said Contract and to unconditionally pay the amount claimed by the Purchaser on demand and without demur to the extent aforesaid.

We, the ..... (Name of the Bank) do hereby agree that any demand made by Purchaser on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. We shall not withhold the payment on the ground that the supplier has disputed its liability to pay or has disputed the quantum of amount or that any legal proceeding is pending between the Purchaser and the Supplier regarding the claim. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs.....

We, the ..... (Name of the Bank) do further agree Guarantee herein contained shall come into force from the date hereof and shall remain in full force and effect up to ..... Unless demand or claim under this Guarantee is made on us in writing on or before..... we shall be discharged of all liabilities under this Guarantee thereafter.

We, the ..... (Name of the Bank) further agree with the Purchaser that the Purchaser, shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend the time of delivery of the specified items in the Contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Purchaser against the said supplier and to forbear or enforce any of the terms and conditions relating to the said contract we shall not be relieved from our liability by the reason or any such variations or extension being granted to the said Supplier or for any forbearance act or omission on the part of the Purchaser or any indulgence by the Purchaser to the said Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us the Bank further agrees that in case this Guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above. The Bank shall pay to the Purchaser the said sum of .....or such lesser sum as may then be due to the Purchaser and as the Purchaser may demand.

We, the ..... (Name of the Bank) lastly undertakes not to revoke this Guarantee during this currency except with the previous consent of the Purchaser in writing.

The Bank has under its constitution power, to give this Guarantee and Mr. .... Manager who has signed it on behalf of the Bank has authority to do so.

This Bank Guarantee will not be discharged due to the change in the constitution of the Bank or the Supplier. In case the BGs are from outstation branch of Dhanbad then BG shall be encashable at Dhanbad/Kolkata branch of issuing bank with address and location of the said branch at Dhanbad/ Kolkata will be as under.

Name of the Bank:  
Name of the Branch:  
Location & Address:  
The BG shall be subject to the jurisdiction of the competent courts at Dhanbad District only.]

Dated .....day of .....  
For ..... Bank Limited.

Signature of the authorized person  
For and on behalf of the Bank  
Emp. Code.



## Annexure-III

### FORMAT OF PERFORMANCE BANK GUARANTEE

1. Messrs ..... a company having its office at ..... hereinafter called the Seller has entered into a Contract No. ....  
-----dt----- (hereinafter called the said Contract) with Bharat Coking Coal Limited (hereinafter called , the Purchaser) to supply equipment on the terms and conditions in the said Contract.  
It has been agreed that hundred per centage ( 100% ) payment of the value of the equipment will be made to the seller in the terms of the said Contract on the seller furnishing to the Purchaser a Bank Guarantee for the sum of .....  
- equivalent to 10 % of the value of each equipment and accessories dispatched by the seller as security for the due and faithful performance of the terms of the said contract and against any loss or damage caused to or would be caused to or suffered by the purchaser by reason of any of the terms or conditions contained in the said contract.  
The..... Bank having its office at ..... has at the request of seller agreed to give the guarantee herein after contained.
2. We,..... (Name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demur merely on a demand from the purchaser stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the purchaser by reason of any breach by the said seller of any of the terms or conditions contained in the said contract or by reason of the seller's failure to perform the said contract. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. We shall not withhold the payment on the ground that the seller has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between purchaser and the seller regarding the claim. However, our liability under this guarantee shall be restricted to an amount not exceeding .....
3. We,..... (Name of the Bank) further agree that the guarantee herein contained shall come into force from the date hereof and shall remain in full force and effect during the period of the said contract and that it shall continue to be enforceable till all the dues of the purchase under or by virtue of the said contract have been fully paid and its claim satisfied or purchase certified that the terms and conditions of the said contract have been fully and properly carried out by the said seller and accordingly discharged the guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the .....( date to be given.....) period of contract + 90 days from the date of Bank Guarantee) we shall be discharged from all liability under this guarantee thereafter.
4. We, (Name of the Bank) further agree with the purchaser , that the purchaser , shall have the fullest liberty without our consent and without affecting in any manner no obligations hereunder to vary any of the terms and conditions of the said contract or to extend time of performance by the said seller(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the purchaser, against the said seller and to forbear or enforce any of the terms and conditions relating to the said contract and we shall not be relieved from our liability by reason or any such variation or extension being granted to the said seller or for any forbearance act or omission on the part of the purchaser , or any indulgence by the purchaser to the said seller by any such matter or thing whatsoever which under the law relating to sureties would be for this provision have effect of an relieving us. The Bank further agrees that in case this guarantee is required for a longer period and it is not extended by the bank beyond the period specified above , the bank shall pay to this purchaser the said sum of ..... or such lesser sum as may than be due the purchaser and as the purchaser may demand.
5. We ,..... (Name of the Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the purchaser , in writing.
6. The Bank has under its constitution power to give this guarantee and Mr.....Manager, who has signed it on behalf of the Bank has authority to do so.

[In case the BGs are from outstation branch of Dhanbad then BG shall be encashable at Dhanbad/Kolkata branch of issuing bank with address and location of the said branch at Dhanbad/ Kolkata will be as under.

Name of the Bank:  
Name of the Branch:  
Location & Address:

The BG shall be subject to the jurisdiction of the competent courts at Dhanbad District only.]

Dated .....day of .....  
For ..... Bank Limited.

Signature of the authorized person  
For and on behalf of the Bank  
Emp. Code.

## Annexure-II

### (1) TECHNICAL SPECIFICATION OF COILS & COMMUTATOR

#### CONDUCTOR FOR ALL COILS:-

99.94% or above electrolytic grade class - F / class - H (for motor coils only) **enameled** copper strip/round conductor as per original size with class -F/ class - H (for motor coils only) varnished double glass covering as per IS specification no. - 10114.

HOWEVER, FOR COMPOLE COILS OF BHEL MAKE ONLY THE CONDUCTOR WILL BE 99.94% OR ABOVE ELECTROLYTIC GRADE & ANNEALED COPPER STRIP WITHOUT ANY SHARP EDGE, CRACKS & VOIDS.

#### INSULATION SCHEME:-

##### ARMATURE COILS FOR D. C. GENERATOR/MOTOR

- i) Interlayer separation by 3 mills silicone glass-mica sheet throughout the coil length.
- ii) Coil conductors to be bunched together without void or bulged out portion. Bend protection by TEFLONER tape only.
- iii) Slot portion insulation to be mould with sannicaflex & epoxy bonding for a minimum dielectric strength of 2KV DC for one minute.
- iv) Overhang portion insulation by sannicaflex tapes only.
- v) Conductor lead taping by samica tape & 3 mills superfine quality glass-fiber tape with proper vanishing. Conductor end leads are to be tinned properly with 2% silver contained solder.
- vi) Overhang portion to be final taped by 5 mills superfine quality glass-fiber tape as per IS: 5352-13-4 half - overlap & to be varnished properly.
- vii) Class of insulation - Class-F (for generator coils) / class - H (for motor coils).

##### MAIN POLE COIL ASSY. FOR DC GENERATORS

i) The conductor to be wound as per size of coil with layer to layer epoxy bonding without any bulged out portion and smooth corner finish, so that the gap between core & coil inside wall will be uniform for all four sides at the time of fitting. Proper bindings of the coil packs are to be provided for firm holding of the coil layers. The end connection terminals are to be properly secured within the coil pack & to be tinned properly.

For BHEL/ USSR make no overall taping of the coils are required. For KEC make, the coils are to be formed in pre-mould glass-epoxy based hobbin.

- ii) Spray type epoxy based insulating paint to be used for final finish.
- iii) Coil pack separators as per size of the coils & core made out of high quality glass epoxy laminated sheet (specific gravity not less than 1.8) are to be provided. The thickness of the sheets will be ranging from 2mm to 4mm & four nos for each coil assly.
- iv) Class of insulation -'F'

##### COMPOLE COIL ASSLY. FOR DC GENERATOR

###### For commutating coils:-

- i) Inter layer separation & bonding by PERMACEL \* INTERCEM or eqvt. epoxy resin based ceramic sheet with proper curing at required temp. & pressure for gapless & void free rigid bonding of the layers.
- ii) No overall taping of any kind will be provided considering the heat dissipation factors, but proper end connection leads to be provided.

###### For stabilizing coils:-

The stabilizing coils are to be wound with layer to layer epoxy bonding & overall taping of the coil packs to be provided with SAMICAFLEX tape & PERMACEL P--300 or eqvt. tapes . All end connection leads are to be provided with appropriate size Silicone rubber insulated multi core copper cable including end lugging etc.

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- iii) Coil pack separators as per size of coil & core made out of high quality epoxy- laminated glass-fiber sheet (specific gravity not less than 1.8) are to be provided. Thickness of sheet ranging from 2mm to 4mm & three nos. for each coil are required.
  - iv) Spray type epoxy paint are to be used for final coating & finish.
  - v) Class of insulation: -- 'F'.
- For KIRLOSKAR Make the insulation scheme will be same as MP Coil in pre - mould glass - epoxy bobbin.

#### MAIN POLE COIL FOR DC MOTORS

- i) For BHEL / USSR make - conductor to be wound as per size of coil in layers with layer to layer epoxy bonding as per the shape of original coils sample.  
For Kirloskar make - Conductors to be wound in layers with layer to layer epoxy bonding in a pre-mould bobbin made out of high quality glass epoxy & as per shape & size of original sample coils.
- ii) For both type proper end terminal connectors are to be provided. The terminal connectors are to be properly secured within the coil pack to avoid any chance of breakage or loosening of the connectors.
- iii) For BHEL / USSR make - The coil conductor pack to be wrapped with multi-layer samicaflex tape only with epoxy bonding for ground insulation. Overall taping to be done by PERMACEL \*P-- 300 or eqvt. tape completely cured at 125 deg. C for 8 hours as per process of curing. For Kirloskar make, no ground insulation is required.
- iv) Spray type epoxy paint to be used for final finish for both the models.
- v) Class of insulation -- 'H'

#### COMPOLE COIL FOR DC MOTOR

- i) Inter layer separation & bonding by PERMACEL \* INTERCEM or epoxy resin based ceramic sheet with proper curing at required temperature & pressure for gapless & void free rigid bonding of the layers.
- ii) Ground insulation by SAMICAFLEX tapes with epoxy bonding. Overall taping by PERMACEL \*P--300 or eqvt. tape completely cured as per process of curing as stated above.  
For Kirloskar make bobbin as per size of coil & core made out of glass epoxy to be used in which the conductor are to be wound in layers with epoxy resin bonding.
- iii) Spray type epoxy paint to be used for final finish.
- iv) Class of insulation--'H'.

#### TESTING OF THE COILS

- i) Conductor test certificate indicating size of conductor for conductivity, enamel grade & chemical grade of copper from GOVT. APPROVED test house/ conductor manufacturer or by the OEM for each set of coils.
- ii) High voltage test by the coil manufacturer for each set of coils.
- iii) Inter-turn insulation / impulse test/tan-delta test certificate and short circuit test for each set of coils.
- iv) Resistance / voltage drop test for each set of coils.

ALL THE TEST CERTIFICATES ARE TO BE PROVIDED ALONGWITH SUPPLY.  
ANY SUPPLY WITHOUT ABOVE TEST CERTIFICATES WILL BE TREATED AS NON-SUPPLY.

#### COMMUTATORS

All commutators are to be strictly as per IS: 5885 - 1977.

- i) Type of segment:- High conductivity hard drawn oxygen free silver bearing (silver content 0.06% or more) copper trapezoidal section with proper vee-groove & dimensions . The hardness & electrical conductivity will be as per IS--4519/1977& without any sharp edge, crack, void, concave/convex surface, pitting marks etc.
- ii) Inter-segment insulation:- Alkyd vinyl treated hard pressed commutator mica sheet of appropriate size with proper thermal compressive & bonding property .
- iii) Mica V-cones: - All mica vee-cones are to be formed separately by alkyd vinyl as per size of segment groove in separate molds with commutator mica sheet.
- iv) Steel V-rings: - Steel vee - rings are to be made from forged steel/high quality structural steel with provision of nut -bolts/check-nuts fastening arrangement as per requirements. The commutator

Sagrik

H

hub are to be of same materials. Proper locking of each parts are to be done so that the complete commutator must act as a rigid single piece. All Vee rings must be protected from the copper segments on both side.

- v) Sealing:- Gaps between vee-ring & copper segments are to be sealed with high quality RTV silicone sealant. The vee-ring projected portion to be banded with resi-glass only.
- vi) Risers: - Risers for flexible/ sprocket type are to be made out of virgin silver bearing copper sheet & must be tinned. Size & shape will be as per sample/ drawing.
- vii) Ground insulation: - 5KV for one minute & bar to bar test at 500 volts.
- viii) Class of insulation - Class 'F' (for generators)/class-'H' (for motors).
- ix) Seasoning: - All commutators must be seasoned static & dynamically as per IS recommended load & cycles depending on duty & size of the commutator. Spin test certificate at a speed of 1.2 times of the rated rpm of the commutator to be done.
- x) Dynamic balancing: - All commutators are to be dynamically balanced at 1500 RPM.

**Testing:-**

- i) Copper & silver percentage (in exact) of commutator segments by chemical tests from GOVT. APPROVED test house or by the OEM to be done.
- ii) Following tests are to be done by the commutator manufacturer.

- \* High voltage test

- \* Dynamic Balancing

- \* Bar to bar test.

- \* Spin test & seasoning certificate for each commutator to be submitted at 1500RPM.

ALL THE ABOVE TEST CERTIFICATES ARE TO BE PRODUCED ALONGWITH SUPPLY.

*ps*  
*Senthil*

PURCHASE ORDER NO. :

233

DATED 11/02/15

Format for vigilance Report & purchase order/Rate contract uploading

1	Tender no.	Bcell/POR/814029/CBLS & Communication 14-15/14
2	Mode of tender enquiry	Open Tender
3	Date of publication of Tender.	21/07/14
4	Type of bidding(Single/ two bid )	Two
5	Last date of receipt of tender.	12/08/14
6	Tech.Bid Opening Date	14/08/14
7	No. of valid tender received.	Four
8	No and names of Tenderers qualified after tech. evaluation.	Two ① M/S R. Traders ② M/S Spares & Equipments
9	No and names of Tenderers not qualified after tech. evaluation.	TWO ① M/S Integrated Electric Co. (P) Ltd. ② Electrical Micamite Corporation
10	Price Bid Opening Date	14/11/14
11	Total landed Value(in Rs)	Rs 26,64,601.00
12	Whether contract awarded to lowest tenderer evaluated	Yes
13	Whether Integrity pact is applicable?	Yes
14	Indent registration No.	614029
15	Indent registration Date	29/05/14
16	Supplier Type(mark ✓)	M/S,
Date:		Signature of Dealing Officer 11/02/15

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