



उत्तर दक्षिण हरियाणा बिजली वितरण निगम  
UTTAR DAKSHIN HARYANA BIJLI VITRAN NIGAM



**BIDDING DOCUMENTS**  
**FOR PROCUREMENT**  
**OF**  
**12.5 MVA, 33/11 KV POWER TRANSFORMERS**

**Purchaser:** Uttar & Dakshin Haryana Bijli Vitran Nigam Ltd.

**TENDER ENQUIRY FLOATED BY: -**

**DAKSHIN HARYANA BIJLI VITRAN NIGAM**  
(A Power Distribution & Retail Supply Utility, Govt. of Haryana)  
An ISO 9001:2008 compliant utility, CIN:- U99999HR1999SGC034165  
Regd. Office: Vidyut Sadan, Vidyut Nagar, Hisar-1250005 (Haryana)  
Office of the Chief Engineer/MM, Vidyut Nagar, Hisar-1250005 (Haryana)  
PH- 223061(O), 223005 (Fax) [G.M./MM-223332]  
E-mail: [semmdhbvn@gmail.com](mailto:semmdhbvn@gmail.com) , [cemmhisar@gmail.com](mailto:cemmhisar@gmail.com)



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**NOTICE INVITING TENDERS**  
(Only through e-procurement)

**NOTICE INVITED TENDER No.598/DH/MM/XEN/MM-**

**DATED:15.05.2018**

Offers are invited for procurement of following material on Variable Price & 'FOR' destination basis anywhere in Haryana, by fixing the annual rate contract as per details given below:-

Description of item	Qty. for DHBVN (In Nos.)	Qty. for UHBVN (In Nos.)	Total qty. (In Nos.)	Estimated cost
Three phase, 50 Hz, 12.5 MVA, 33/11 KV Step down, outdoor ONAN Power Transformers complete with all accessories /fittings and conforming to Nigam's Technical Specification No. CSC-74-R-II/DH/UH/P&D/2015-16(with amendment) and relevant ISS with latest amendments.	5	0	5	Min. 1.78 crore Max. 2.97 crore
Date of start	Last date of submission			<b>Opening date of part-I</b>
17.05.2018	08.06.2018 (1300 Hours)			08.06.2018 (15 Hours)

Tender documents having detailed terms and conditions can be seen/downloaded from the portal <https://haryanaeprocurement.gov.in> and [www.dhbvn.org.in/web/portal/tenders](http://www.dhbvn.org.in/web/portal/tenders)

Superintending Engineer/MM  
For CE/MM, DHBVN, Hisar

For Publication only



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DAKSHIN HARYANA BIJLI VITRAN NIGAM

**NOTICE INVITING TENDER**

(Only through e-procurement)

**SCHEDULE OF TENDER (SOT)**

A NOTICE INVITING TENDER (NIT) NO.	598/DH/MM/II DATED: -15.05.2018				
b) e-tender no.	83676				
c. MODE OF TENDER	e-Procurement System (Online Part I - Techno-Commercial Bid and Part II - Price Bid Through <a href="https://haryanaeprocurement.gov.in">https://haryanaeprocurement.gov.in</a> of Nextenders India Pvt. Ltd.)				
d. Tender Enquiry No. under NIT No.	<b>QD-778</b>				
e. Date of NIT available to parties to download	17.05.2018				
f i) Earnest Money Deposit	<b>Rs. 2,00,000</b> (2% of estimated cost subject to max. Rs. 2 Lacs). Exempted for Haryana State Micro and Small Enterprises (MSEs) including KVI units.				
ii) Tender Fees (Non-refundable)	<table border="1"> <tr> <td>For all the bidders and Haryana based MEs (Rs.)</td> <td>For the Haryana MSEs and KVI unit</td> </tr> <tr> <td>5000/-</td> <td>Exempted</td> </tr> </table>	For all the bidders and Haryana based MEs (Rs.)	For the Haryana MSEs and KVI unit	5000/-	Exempted
For all the bidders and Haryana based MEs (Rs.)	For the Haryana MSEs and KVI unit				
5000/-	Exempted				
iii) E-Service Fee (Non-refundable)	<b>Rs. 1000/-</b>				

Offer are invited for procurement of following material through fixing the rate contract on 'Variable' & 'FOR' destination rates basis anywhere in Haryana, as per details given below. The rate contract shall be valid for one year from the date of award of contract and can be extended further for one more year with mutual consent.

**SCHEDULE OF MATERIAL: -**

T.E. no.	Description of material	DHBVN		UHBVN		Total	
		Min	Max	Min	Max	Min	Max
QD-	Three phase, 50 Hz, 12.5 MVA, 33/11 KV Step down, outdoor ONAN Power Transformers complete with all accessories /fittings and conforming to Nigam's Technical Specification No. CSC-74-R-II/DH/UH/P&D/ 2015-16(with amendment) and relevant ISS with latest amendments.	03	05	0	0	03	05

- 1) Only those tenders will be considered who fulfill the **Pre Qualification Conditions** mentioned in the tender documents (as elaborated in **Annexure-II**)
- 2) Only those tender shall be considered who deposit the earnest money and tender cost & E-Service Fee by due date.



Information Regarding Online Payment of Tender Document , eService & EMD Fee.

- 1) The Bidders can download the tender documents from the Portal: <https://haryanaeprocurement.gov.in>. The Bidders shall have to pay for the Tender documents, EMD Fees & e-Service Fee online by using the service of secure electronic payment gateway. The secure electronic payments gateway is an online interface between suppliers and online payment authorization networks. The Payment for Tender Document Fee and eService Fee can be made by eligible bidders/ suppliers online directly through Debit Cards & Internet Banking Accounts and the Payment for EMD can be made online directly through RTGS / NEFT.
- 2) If the tenders are cancelled or recalled on any grounds, the tender document fees & e-service fee will not be refunded to the agency.
- 3) The detailed procedure/instructions to bidder on Electronic Tendering System are at **Annexure-I**.
- 4) **For any clarification regarding bid preparation and bid submission, please contact: M/s Nextenders (India) Pvt. Ltd.**  
O/o. DS&D Haryana, SCO – 09, IIInd Floor, Sector – 16, Panchkula – 134108  
**E - mail: [Chandigarh@nextenders.com](mailto:Chandigarh@nextenders.com)** Help Desk: 1800-180-2097 (**Toll Free Number**)
- 5) The Tenderers can submit their tender documents (Online) as per the dates mentioned in the key dates schedule:

**Key Dates schedule:**

Sr. No.	Department Stage/Activity	Tenderer's Stage	Start date and time	Expiry date and time
1.	-	Downloading of Tender Documents & Bid Preparation & submission	17.05.2018 at 11:00 Hours	08.06.2018 at 13:00 Hours
2	Manual submission of technical documents (Within 4 days from the opening of part-I)		-	12.06.2018 at 17:00 Hours
3	Technical Opening (Part-I)	-	08.06.2018 at 15:00 Hours	
4	Short-listing of Technical bids & Opening of Financial Bid			Will be intimated to the firms on their E-mail ids

Superintending Engineer/MM  
For CE/MM, DHBVN, Hisar

**For Uploading on website only**



**Annexure-I**

***Instructions to bidder on Electronic Tendering System***

**These conditions will over-rule the conditions stated in the tender documents, wherever relevant and applicable.**

1. **Registration of bidders on eProcurement Portal:-**  
All the bidders intending to participate in the tenders processed online are required to get registered on the centralized e - Procurement Portal i.e. <https://haryanaeprocurement.gov.in>. Please visit the website for more details.
2. **Obtaining a Digital Certificate:**
  - 2.1 The Bids submitted online should be encrypted and signed electronically with a Digital Certificate to establish the identity of the bidder bidding online. These Digital Certificates are issued by an Approved Certifying Authority, by the Controller of Certifying Authorities, Government of India.
  - 2.2 A Digital Certificate is issued upon receipt of mandatory identity (i.e. Applicant's PAN Card) and Address proofs and verification form duly attested by the Bank Manager / Post Master / Gazetted Officer. Only upon the receipt of the required documents, a digital certificate can be issued. For more details please visit the website – <https://haryanaeprocurement.gov.in>.
  - 2.3 The bidders may obtain Class-II or III digital signature certificate from any Certifying Authority or Sub-certifying Authority authorized by the Controller of Certifying Authorities or may obtain information and application format and documents required for the issue of digital certificate from:  
**M/s Nextenders (India) Pvt. Ltd.**  
O/o. DS&D Haryana,  
SCO – 09, IInd Floor,  
Sector – 16,  
Panchkula – 134108  
**E - mail: [Chandigarh@nextenders.com](mailto:Chandigarh@nextenders.com)**  
**Help Desk: 1800-180-2097 (Toll Free Number)**
  - 2.4 Bid for a particular tender must be submitted online using the digital certificate (Encryption & Signing), which is used to encrypt the data and sign the hash during the stage of bid preparation & hash submission. In case, during the process of a particular tender, the user loses his digital certificate (due to virus attack, hardware problem, operating system or any other problem) he will not be able to submit the bid online. Hence, the users are advised **to keep a backup of the certificate** and also keep the copies at safe place under proper security (for its use in case of emergencies).
  - 2.5 In case of online tendering, if the digital certificate issued to the authorized user of a firm is used for signing and submitting a bid, it will be considered equivalent to a no-objection certificate/power of attorney /lawful authorization to that User. The firm has to authorize a specific individual through an authorization certificate signed by all partners to



- use the digital certificate as per Indian Information Technology Act 2000. Unless the certificates are revoked, it will be assumed to represent adequate authority of the user to bid on behalf of the firm in the department tenders as per Information Technology Act 2000. The digital signature of this authorized user will be binding on the firm.
- 2.6 In case of any change in the authorization, it shall be the responsibility of management / partners of the firm to inform the certifying authority about the change and to obtain the digital signatures of the new person / user on behalf of the firm / company. The procedure for application of a digital certificate however will remain the same for the new user.
- 2.7 The same procedure holds true for the authorized users in a private/Public limited company. In this case, the authorization certificate will have to be signed by the directors of the company.
- 3 **Opening of an Electronic Payment Account:**  
Tender document can be downloaded online. Bidders are required to pay the tender documents fees online using the electronic payments gateway service. For online payments guidelines, please refer to the Home page of the e-tendering Portal <https://haryanaeprocurement.gov.in>.
- 4 **Pre-requisites for online bidding:**  
In order to bid online on the portal <https://haryanaeprocurement.gov.in>, the user machine must be updated with the latest Java. The link for downloading latest java applet is available on the Home page of the e-tendering Portal.
- 5 **Online Viewing of Detailed Notice Inviting Tenders:**  
The bidders can view the detailed N.I.T and the time schedule (Key Dates) for all the tenders floated through the single portal eProcurement system on the Home Page at <https://haryanaeprocurement.gov.in>.
- 6 **Download of Tender Documents:**  
The tender documents can be downloaded free of cost from the e-Procurement portal <https://haryanaeprocurement.gov.in>.
- 7 **Bid Preparation (Technical & Financial) Online/offline Payment of Tender Document Fee, eService fee, EMD fees and Submission of Bid Seal (Hash) of online Bids:**
- 7.1 The online payment for Tender document fee, eService Fee & EMD can be done using the secure electronic payment gateway. The Payment for Tender Document Fee and eService Fee can be made by eligible bidders/ contractors online directly through Debit Cards & Internet Banking Accounts and the Payment for EMD can be made online directly through RTGS / NEFT .  
The secure electronic payments gateway is an online interface between contractors and Debit card / online payment authorization networks.
- 7.2 The bidders shall **upload** their technical offer containing documents , qualifying criteria, technical specification, schedule of deliveries, and all other terms and conditions except the rates (price bid).  
The bidders shall **quote** the prices in price bid format.
- 7.3 Submission of bids will be preceded by submission of the digitally signed & sealed bid (Hash) as stated in the time schedule (Key Dates) of the Tender.
- NOTE:-**  
(A) If bidder fails to complete the Online Bid Submission stage on the stipulated date and time, his/hers bid will be considered as bid not





- submitted, and hence shall not appear during tender opening stage.
- (B) Bidder participating in online tenders shall check the validity of his/her Digital Signature Certificate before participating in the online Tenders at the portal <http://haryanaeprocurement.gov.in>.
- (C) For help manual, please refer to the 'Home Page' of the e-Procurement website at <https://haryanaeprocurement.gov.in>, and click on the available link 'Download' to download the file.

**Guidelines for Online Payments in e-tendering**

Post registration, bidder shall proceed for bidding by using both his digital certificates (one each for encryption and signing). Bidder shall proceed to select the tender he is interested in. On the respective Department's page in the e-tendering portal, the Bidder would have following options to make payment for tender document & EMD:

- a. Debit Card
- b. Net Banking
- c. RTGS/NEFT

**Operative Procedures for Bidder Payments**

**A) Debit Card**

The procedure for paying through Debit Card will be as follows.

- (i) Bidder selects Debit Card option in e-Procurement portal.
- (ii) The e-Procurement portal displays the amount and the card charges to be paid by bidder. The portal also displays the total amount to be paid by the bidder.
- (iii) Bidder clicks on "Continue" button
- (iv) The e-Procurement portal takes the bidder to Debit Card payment gateway screen.
- (v) Bidder enters card credentials and confirms payment
- (vi) The gateway verifies the credentials and confirms with "successful" or "failure" message, which is confirmed back to e-Procurement portal.
- (vii) The page is automatically routed back to e-Procurement portal
- (viii) The status of the payment is displayed as "successful" in e-Procurement portal. The e-Procurement portal also generates a receipt for all successful transactions. The bidder can take a print out of the same,
- (ix) The e-Procurement portal allows Bidder to process another payment attempt in case payments are not successful for previous attempt.

**B) Netbanking**

The procedure for paying through Netbanking will be as follows.

- (i) Bidder selects Netbanking option in e-Procurement portal.
- (ii) The e-Procurement portal displays the amount to be paid by bidder.
- (iii) Bidder clicks on "Continue" button
- (iv) The e-Procurement portal takes the bidder to Netbanking payment gateway screen displaying list of Banks
- (v) Bidder chooses his / her Bank
- (vi) The Netbanking gateway redirects Bidder to the Netbanking page of the selected Bank
- (vii) Bidder enters his account credentials and confirms payment
- (viii) The Bank verifies the credentials and confirms with "successful" or "failure" message to the Netbanking gateway which is confirmed back to e-Procurement portal.





- (ix) The page is automatically routed back to e-Procurement portal
  - (x) The status of the payment is displayed as “successful” in e-Procurement portal. The e-Procurement portal also generates a receipt for all successful transactions. The bidder can take a print out of the same.
  - (xi) The e-Procurement portal allows Bidder to process another payment attempt in case payments are not successful for previous attempt.
- C) RTGS/ NEFT
- The bidder shall have the option to make the EMD payment via RTGS/ NEFT. Using this module, bidder would be able to pay from their existing Bank account through RTGS/NEFT. This would offer a wide reach for more than 90,000 bank branches and would enable the bidder to make the payment from almost any bank branch across India.
- i. Bidder shall log into the client e-procurement portal using user id and password as per existing process and selects the RTGS/NEFT payment option.
  - ii. Upon doing so, the e-procurement portal shall generate a pre-filled challan. The challan will have all the details that is required by the bidder to make RTGS-NEFT payment.
  - iii. Each challan shall therefore include the following details that will be pre-populated:
    - Beneficiary account no: (unique alphanumeric code for e-tendering)
    - Beneficiary IFSC Code:
    - Amount:
    - Beneficiary bank branch:
    - Beneficiary name:
  - iv. The Bidder shall be required to take a print of this challan and make the RTGS/NEFT on the basis of the details printed on the challan.
  - v. The bidder would remit the funds at least one day in advance to the last day and make the payment via RTGS / NEFT to the beneficiary account number as mentioned in the challan.
  - vi. Post making the payment, the bidder would login to the e-Tendering portal and go to the payment page. On clicking the RTGS / NEFT mode of payment, there would be a link for real time validation. On clicking the same, system would do auto validation of the payment made.



**List of Net banking banks**

1. Allahabad Bank
2. Axis Bank
3. Bank of Bahrain and Kuwait
4. Bank of Baroda
5. Bank of India
6. Bank of Maharashtra
7. Canara Bank
8. City Union Bank
9. Central Bank of India
10. Catholic Syrian Bank
11. Corporation Bank
12. Deutsche Bank
13. Development Credit Bank
14. Dhanlaxmi Bank
15. Federal Bank
16. HDFC Bank
17. ICICI Bank
18. IDBI Bank
19. Indian Bank
20. Indian Overseas Bank
21. Indusind Bank
22. ING Vysya Bank
23. J and K Bank
24. Karnataka Bank
25. Kotak Mahindra Bank
26. Karur Vysys Bank
27. Punjab National Bank
28. Oriental Bank of Commerce
29. South Indian Bank
30. Standard Chartered Bank
31. State Bank Of Bikaner and Jaipur
32. State Bank of Hyderabad
33. State Bank of India
34. State Bank of Mysore
35. State Bank of Travencore
36. State Bank Of Patiala
37. Tamilnad Mercantile Bank
38. Union Bank of India
39. United Bank of India
40. Vijaya Bank
41. Yes Bank



Schedule- B

**NECESSARY INSTRUCTION/TERMS & CONDITIONS FOR THE BIDDER**

Sr. No.	Necessary instruction/Terms & Conditions for the bidder
1.	Tender must be submitted on prescribed tender form and complete in all respects and submitted through e-procurement mode only. No other mode like email/fax etc. shall be acceptable.
2.	Tender enquiry has been floated for procurement of material as specified in NIT for fixing the rate contract valid for one year from the date of issue of rate contract (which can be extended further for one year with the mutual consent of purchaser and supplier at the same rates, terms & conditions).
3.	Tenderer must carefully study the technical specifications and general terms and conditions before preparation of tender. All terms and conditions of NIT and Corrigendum shall be applicable.
4.	The tenders not meeting the requirement of pre-qualification conditions, necessary terms and conditions of the NIT and Nigam technical specifications shall be rejected.
5.	The bidders shall have to pay for the tender documents, EMD Fees & e-Service Fee online by using the service of secure electronic payment gateway. The secure electronic payments gateway is an online interface between contractors/suppliers and online payments authorization networks. The payment for Tender Document Fee and eService Fee can be made by eligible bidders/suppliers online directly through Debit Cards & Internet banking Accounts and the Payment for EMD can be made online directly through RTGS/NEFT. The Bank charges, if any, will be to the account of the tenderer. No claims against the Nigam either in respect of interest if any due on the Security deposit/Earnest money or its depreciation in value shall be admitted
6.	Detailed procedure for depositing earnest money, order preference to Haryana firms, delivery schedule and other terms and conditions are contained in SOT & schedule D of tender documents. Each tender document is required to be signed by his authorized representative alongwith stamp and is to be uploaded thereafter.
7.	The following tenders shall be exempted from the deposit of earnest money. (i) Wholly Govt. of India owned undertakings. (i) Wholly State owned undertakings of Haryana.
8.	The tenders should remain valid for 180 days from the date of opening of tender (Part-I in case of two part tender) otherwise the same will not be accepted and rejected out-rightly.
9.	The offers/tenders will be opened on the date and time prescribed in the Notice Inviting Tenders. In case the date of opening falls on a holiday including Sunday or a holiday is subsequently declared on that date, the tenders will be opened on next working day following the holiday.
10.	All tenders/offers will be regarded as constituting an offer or offers open to acceptance in whole or in part until the last date of validity as prescribed in the notice inviting tenders or as indicated by the tenderer in his tender/offer, whichever be later.
11.	The price must be quoted in Indian Rupees and any mistake in calculating the rupee price will not justify the claim for increase in prices.
12.	Authenticated documents to prove authority of signatory (legal power of attorney in favour of signatory) <b>must be uploaded</b> . Memorandum of article and Memorandum of association of the firm, if applicable, shall also be <b>uploaded with the tender</b> . The firm shall submit the detail information in the performa of particular of



	bidder. ( <b>Annexure-III</b> )
13.	The tenderer shall give details of immovable property i.e. land, building, machinery, exact location of their property and copy of constitution/balance sheet alongwith the tender. <b>The document shall be uploaded by the supplier/s.</b>
14.	Tender not adhering to Nigam's delivery schedule will not be considered.
15.	If more than one bid is submitted by any/one bidder, (having same registered office), the same shall be rejected.
16.	The deviations in Technical & Commercial terms and Conditions, if any, must be brought out clearly on the performa enclosed ( <b>Annexure-V</b> ), failing which it will be presumed that the same are acceptable in to-to.
17.	Tenderer/s shall submit their offer in an ambiguous free wording failing which DHBVN/UHBVN interpretation will be final.
18.	The tenders shall be submitted in two parts. Part-I shall consist technical details and commercial terms and part-II shall consist price bid only. Part-II i.e. price bids shall be opened on a date to be intimated separately for the purpose.
19.	<b>Purchase Preference:</b> The provision for purchase preference shall be as per policy/ guidelines issued by the State Govt. vide G.O. No. 2/2/2010-4 I B II dated 19.12.2011 and/or latest instruction issued by the State Govt. All other Policy decisions/ guidelines on procurement of Stores through the Directorate of Supplies and Disposals as applicable for the state of Haryana are also applicable in this case (Unless stated /decided otherwise). The instructions/guidelines issued by Govt. of Haryana vide G.O. No. 2/2/2010-4 I B II dated 28.05.2010, G.O. No. 2/2/2010-4 I B II dated 19.12.11, G.O. No. 2/2/2010-4 I B II dated 18.06.13, G.O. No. 2/2/2010-4 I B II dated 16.6.2014, G.O. No. 2/2/2010-4 I B II dated 9.02.15 & G.O. No. 2/2/2010-4 I B II dated 24.03.15 & G.O. No. 2/2/2016-4IBII (1) dated 20.10.2016 are available on website <a href="http://www.dsndharyana.gov.in">www.dsndharyana.gov.in</a> . the bidders are requested to download the same from website and read carefully before submitting the tender. It shall be presumed that the bidder has read these instructions/guidelines and agreed the same, while evaluating for tender submitted by the firm/supplier/tenderer.
20.	The revision of price bid after opening of Part-I i.e. technical and commercial part of the tender is not allowed. In case of withdrawing the same within the validity period, EMD shall be forfeited.
21.	If any of the firm fails to supply the material within stipulated delivery period, then the leftover quantity of said firm shall be considered for allocation to the firm (s) supplying material under the same NIT and performing better. This clause shall be applicable after issuance of purchase order of the minimum quantity of Rate Contract and with mutual consent of Nigam and the remaining suppliers under the same NIT. The defaulting firm shall have to fulfill its contractual obligations against the minimum quantity of the rate contract, else shall have to bear penal action as per the provisions in the NIT.
22.	<b>Arithmetical Errors:</b> - in case of any inconsistency in the prices furnished, the purchaser shall be entitled to consider the lowest prices for the purpose of evaluation and award of contract. All arithmetical errors will be rectified on the basis of the unit price or total price (in figures and in words) whichever is more beneficial to the purchaser.
23.	In the event of a firm not favoring the delivery commitments of the previous contracts, this fact will weigh against the firm tendering against a subsequent enquiry and be treated as disability. Before issue of the letter of intent or of placing the order, the previous order should be fully discharged or a reliable under taking should be given that it would be done within a reasonable period and within scope of the previous contract, if the firm declines to give this



	undertaking, it would be considered ineligible for competing against any subsequent tender/order and the current order would automatically pass on the next lower firm.
24.	The tender shall be issued by DHBVN for fixing the rate contract on behalf of both the power utilities i.e. DHBVN & UHBVN. However, all the purchase orders will be issued by CE/MM of respective utilities in a phased manner depending on the requirement of stores. The PQRs and other liabilities of the bidder shall be as per minimum quantity offered.
25.	Material offered should be strictly according to the technical specification attached with the tender documents as laid down in Annexure-A of Schedule D (Part-I) to the Terms and conditions of the contract. Unless a deviation in the specifications given in Annexure 'A' is pointed out by the tenderer specifically, it will be presumed that Offer/tender conforms to the specifications as laid down in Annexure 'A'. However, in case of any ambiguity in the Nigam's technical Specification, the provision of relevant IS with latest amendment will prevail. The concerned Director /Projects, shall be the deciding authority in such cases.
26.	EMD is liable to be forfeited in case of evidence of cartel formation by the bidder(s). The provision for penal action in case of cartel formation by the bidders shall be as per clause No. 9 of policy (guidelines) issued by the State Govt. vide G.O No. 2/2/2010-41 BII dated 28.5.2010.
27.	The purchaser reserves the right to reject any or all the tenders received without assigning any reason.
28.	The firm failing to accept the RC after having made commitments before SPC/HPPC (Nigam)/HPPC (Govt.) shall be blacklisted/ debarred from doing business with Nigam and earnest money of the firm shall be forfeited.
29.	The bidder shall submit alongwith his tender documents, the details of his production capacity, orders in hand/pending with quantity, value and delivery schedule of the material /equipments in question. <b>The document shall be uploaded by the supplier.</b>
30.	The bidder shall submit all the requisite documents pertaining to the plant from where the material will be supplied. <b>The document shall be uploaded by the supplier.</b>
31.	List of customers to whom the material in question has been supplied/orders executed financial year wise and their performance certificates shall be enclosed by the Tenderer. <b>The document shall be uploaded by the supplier.</b>
32.	No change in GTPs/technical parameters/drawings submitted alongwith bid shall be allowed in case the offered material is as per technical specification of Nigam.
33.	The tenderer must submit a hard copy of all the documents related to part-I ( i.e. techno-commercial terms and conditions, where the tender is invited in two parts) uploaded on the site for the said tender duly certifying that these documents are same as uploaded on designated website, within 4 days of opening of part-I. (All affidavit & undertakings should be submitted in original with hard copy).
34.	<b>Submission of Quality Assurance Procedure</b> The Vendor / Contractor at the time of submission of the drawings for approval from DHBVN/UHBVN is also required to submit a Quality Assurance Procedure (QAP) of the materials to be supplied for review and approval. In this QAP, the vendor / contractor shall clearly indicate the quality measures being taken by the manufacturer to maintain the quality of the finished product. The drawings/QAP once approved shall not be required to be submitted for approval again. <b>QAP will indicate the following details:-</b>





	<p>i) Tests being performed on the raw material purchased by manufacturer for manufacturing of the finished product.</p> <p>ii) Tests being conducted during manufacturing of the product (In process testing).</p> <p>iii) Tests which shall be done on the finished product at the time of pre-dispatch inspection.</p> <p>iv) Test results assured by the vendor.</p> <p>v) Tests procedure followed for the inspection with full details of test setup etc.</p> <p>The Inspection shall be carried out on the basis of the approved QAP. All the details provided by the vendor / contractor shall be verified by Nigam / Third Party during the inspection and if any deviation is found from the approved documents, it will be noted in the inspection report.</p>
35.	The firms will enter into an agreement with the Nigam to ensure that there is no fall in the prices of the item under rate contract and in case of any such price fall, the rates of the material will be revised as per any decrease in price.
36.	The max. Quoted qty. shall be considered as 1.5 times of the min. qty. quoted by the bidder/s against the NIT.
37.	MODVAT benefits, if any, be included in quoted prices and confirmed in bid submission.
38.	All the other terms and conditions will be as per latest guidelines of Govt. of Haryana and schedule D (general and particular terms & conditions of contract) and technical specification of Nigam. However, any statutory variation shall be borne by the Nigam, during contractual delivery schedule only i.e. increase in statutory variation beyond the overall delivery period shall be borne by the firm. Further, in case of award of contract / PO to the firm/s having exemption in statutory levy like GST etc. at the time of quoting the bid, the rate of such statutory levies as applicable on the date of tender opening / finalization shall be deemed to be included in the rates finalized.
39.	The post tender offers or communications received from the supplier/contractors etc. which effect the quoted and equivalent rates there by changing the merit position of the tender shall not be entertained
40.	On the day the purchaser conveys acceptance to the supplier's offer either through e-mail/fax or by a letter, the date of e-mail/fax or letter will be the date of agreement and the contractual obligations of the supplier will commence from that very date. The supplier will have no right to revoke his offer after the acceptance of purchaser.
41.	<b>The benefits applicable vide Govt. of Haryana office order no- 2/2/2016-4-IB-II(1) dated 20.10.2016 &amp; 2/2/2016-4-IB-II(2) dated 20.10.2016 to Haryana based Micro, Small and medium Enterprises (Including KVI units) will be admissible only if the concerned Enterprises participate directly in the tender not through their intermediaries i.e. their dealers/agents and distributors etc. To avail the benefits of Haryana based Micro and Small Enterprises (Including KVI units), the bidders will upload the requisite documents along with the tender documents.</b>
42.	<b>Where ever the Excise Duty (ED),CST or VAT has been mentioned in these tender documents, the same may be read as GST as applicable w.e.f 01.07.2017</b>
43.	<b>Pre-qualification conditions:</b> The firm quoting against the NIT shall meet with the Pre- qualification requirement as elaborated in <b>Annexure-II</b> without which the firm shall not be considered for placement of order. <b>The PQRs and other liabilities of the bidders shall be as per min. quantity offered by the firm.</b>





## Pre-qualification conditions

Sr. no.	Description
i.	The firm should be ISO-9001:2008 certificate or above and should be a manufacturer/authorized agent of manufacturer, if Manufacturer being outside India. (His agent shall have the necessary testing facilities in India).
ii.	<p>The turnover of the firm in any one financial year during the last five financial years should be equivalent or more to the estimated cost of the material of the NIT /estimated cost of the material offered. The documents showing turnover should be duly attested by CA and in support of the same, the balance sheet of that particular year may also be attached. <b>(Estimated cost of material of NIT by taking min. qty. of the tender is Rs.1.78 crore).</b></p> <p><b><i>Manufacturing Small Enterprises (Including Khadi &amp; Village industries) that have filed Entrepreneurs Memoranda in Haryana will be entitled to a concession of 70% on the turnover and shall be considered qualifying accordingly.</i></b></p> <p><b><i>Manufacturing Micro Enterprises that have filed Entrepreneurs Memoranda in Haryana will be entitled to a concession of 80% on the turnover and shall be considered qualifying accordingly.</i></b></p> <p><b><i>Note: - The turnover mentioned in this clause signifies "Overall turnover of the firm". Copies of balance sheets/ certificate of registered CA be attached as a proof.</i></b></p> <p><b><i>(format for CA certificate regarding turnover is enclosed as Annexure VIII)</i></b></p>
iii.	<p>Past Performance of the firm with DHBVN or UHBVN or any Central/State Govt. Power Utility in India should be satisfactory in adhering to the delivery schedule relating to purchase of material only.</p> <p>On the date of opening of bid, the bidder should have completed at least 50% supply of the ordered quantity within contractual delivery period against the latest completed purchase order <b>of 12.5 MVA or above rating at 33 KV or higher level</b> executed for UHBVN and DHBVN &amp; any other power utility subject to the condition that PO has been executed successfully with or without levy of penalty or delivery extension.</p> <p><b>In case of supply of any other central/state govt. power utility the firm shall submit self-certification in the form of affidavit on NJSP alongwith requisite proofs (Format of affidavit attached as Annexure-VII).</b> If bidder has not supplied any material to DHBVN/UHBVN, Nigam shall get pre-order inspection of his facilities done to be sure of his manufacturing capabilities.</p> <p>The supplies should be considered preferably against direct purchase orders placed by central/state Govt. Power Utility for supply of tendered items. However, the offered material supplied against Turnkey works shall be accounted for in adjudging the past performance where offered material</p>



	<p>was supplied to Haryana DISCOMs for consideration of supplies against turnkey works i.e if the potential supplier qualifies in PQR clause (v) then he shall be qualifying PQR clause (iii). However, for PQR clause (iii) &amp; (v) for turnkey supplies, a continuous period of 12 month shall be considered as valid periodicity instead of a calendar year or a financial year.</p> <p>For consideration of supplies against turnkey works, the T/Fs should have been successfully energised on the date of opening of tender (Part-I).</p> <p><b>Manufacturing Micro and Small Enterprises (Including Khadi &amp; Village industries) that have filed Entrepreneurs Memoranda in Haryana, are Exempted in respect of Past Performance &amp; Experience as part of Qualifying Requirements of the tender.</b></p> <p><b>Manufacturing Medium Enterprises of the State that have filed Entrepreneurs Memorandum for quoted items in Haryana, may participate directly in tender and not through any intermediaries (their dealers/agents/distributors), (they) will not subcontract to any other firm and to (they will) carry on the entire manufacturing at their enterprise.</b></p> <p><b>This concession will be applicable only for one year to newly registered Medium Enterprises or Medium Enterprises of State who are not eligible in State Public Procurement due to eligibility criteria of Past Performance &amp; Experience. The firm will be required to submit the detailed information in respect of above details through an affidavit.</b></p> <p><b>The above relaxation are subject to fulfillment of conditions as per eligibility details as notified by the Department of Industries &amp; Commerce, Govt. of Haryana in its order no. 2/2/2016-4IBII (1) dated 20.10.2016.</b></p>
iv.	<p>Minimum qty. to be quoted shall be atleast 20% of the min. Qty. of NIT. An offer below 20% of the min. Qty. of NIT, shall be rejected and its price bid shall not be opened.</p> <p>(Please quote the max / min quantity of supply against this NIT).</p>



v.	<p>The firm bidding 20% or more of NIT qty. should have supplied at least 50% of the offered qty. of similar/higher size/rating in any one financial year during the last 5 financial years to UHBVN/DHBVN or any other power utilities. The capacity wise list of supplies for that particular financial year duly attested by CA must be attached.</p> <p>Turnkey experience of the suppliers for the aforementioned material in respect of DISCOMs of Haryana should also be included while considering the numerical value of 50% material having been supplied by the supplies to qualify towards past experience. The performance of suppliers in respect of their turnkey experience should be got verified from the construction wing of the concerned utility or from the concerned department of Haryana DISCOMs.</p> <p>The list of supplies for that particular year duly attested by CA must be uploaded &amp; attached.</p> <p><b>Manufacturing Micro and Small Enterprises (Including Khadi &amp; Village industries) that have filed Entrepreneurs Memoranda in Haryana are Exempted in respect of Past Performance &amp; Experience as part of Qualifying Requirements of the tender.</b></p> <p><b>Manufacturing Medium Enterprises of the State that have filed Entrepreneurs Memorandum for quoted items in Haryana, may participate directly in tender and not through any intermediaries (their dealers/agents/distributors), (they) will not subcontract to any other firm and to (they will) carry on the entire manufacturing at their enterprise.</b></p> <p><b>This concession will be applicable only for one year to newly registered Medium Enterprises or Medium Enterprises of State who are not eligible in State Public Procurement due to eligibility criteria of Past Performance &amp; Experience. The firm will be required to submit the detailed information in respect of above details through an affidavit.</b></p> <p><b>The above relaxation are subject to fulfillment of conditions as per eligibility details as notified by the Department of Industries &amp; Commerce, Govt. of Haryana in its order no. 2/2/2016-4IBII (1) dated 20.10.2016.</b></p> <p><b>(format for affidavit for past supplies is enclosed as Annexure -VII)</b></p>
vi.	<p>Only those firms who have not been blacklisted by DHBVN/UHBVN or any State/Central Govt. Power Utility in India on the date of issuance of NIT shall be entitled to submit the tenders. The firm shall submit an affidavit of non-blacklisting on the non-judicial stamp paper of the appropriate value attested by Notary public.</p>
vii.	<p>The bidder should have completed the supplies up to the date of opening of Part-I tenders against all the previous purchase orders of similar item irrespective of size/rating placed by UHBVN/DHBVN whose delivery period has already expired with max. penalty, failing which the bid shall be treated as non-responsive and price bid shall not be opened.</p>



**SCHEDULE 'C'**  
**UTTAR/DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED**

**TENDER FORM**

From

\_\_\_\_\_

To

\_\_\_\_\_  
\_\_\_\_\_

Offer No. \_\_\_\_\_

Dated \_\_\_\_\_

Subject : Submission of e-tender against Notice Inviting Tender No. \_\_\_\_\_

dated \_\_\_\_\_ (Tender enquiry no. \_\_\_\_\_ & tender ID No. \_\_\_\_\_) of  
Dakshin Haryana Bijli Vitran Nigam Ltd.

Dear Sir,

With reference to your above mentioned notice inviting tender & tender ID, I/We hereby offer to supply/provide genuine goods/services (as per details given in the tender documents) and shall execute the supply contract truly and faithfully within the time specified and set forth in the attached terms and conditions. The goods/services to be supplied/provided will be of the quality and answerable in every aspect with this tender. I/We shall be responsible for all complaints as regards the quality of goods/services and in case of dispute the decision of the Nigam will be final and binding on me/us.

1. Rs. \_\_\_\_\_ Rupees \_\_\_\_\_) have been deposited online through designated e-procurement website, as earnest money as desired. I fully understand that in the event of my/our tender being accepted this earnest money shall be retained by you till the submission of performance guarantee by me as per clause 6, Schedule-D.

2. I/We shall have no claim to the refund of the earnest money prescribed against this tender in the event of my/our non-compliance of the purchase order provided such order is placed within the period of validity of my/our tender as indicated in paragraph 4 below.

I further understand that my earnest money will stand forfeited even if I withdraw my tender at any stage during the currency of the period of validity.

3. My/our tender shall remain valid for a period of \_\_\_\_\_ days from the last date prescribed for submission of the tenders against the NIT No. \_\_\_\_\_ dt. \_\_\_\_\_ (tender ID No. : \_\_\_\_\_).

4. My/our tender alongwith the terms and conditions with the relevant columns and annexures duly filled in, including the enclosed terms and conditions), (in the capacity of sole owner/ general or special attorney, in proof of which power of attorney is attached) is submitted for your favourable consideration.

5. I/We have read the enclosed terms and conditions carefully and accept the same in toto. My/our tender constitutes a firm offer under the Indian Contract Act 1872 and is open to an acceptance in whole or in parts. My/ our offer, if accepted on the attached terms and conditions will constitute a legally binding contract and shall operate as a contract as defined in the Indian Contract Act 1872 and the Indian sale of goods Act 1930.

6. Detail of documents submitted, duly paginated, by me is attached herewith for ready reference.

Thanking you.

DA/Details of documents

Place  
Dated

Yours faithfully,  
Name & Full Address of Tenderers



NIT No. \_\_\_\_\_

Enquiry No. \_\_\_\_\_

**SCHEDULE 'D'**

**(Part-I, General Conditions of Contract)**

**UTTAR/ DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED**

**GENERAL TERMS AND CONDITIONS FOR PROCUREMENT OF EQUIPMENT STORES AND OTHER MATERIAL UNDER THE RATE CONTRACT**

In construction of the terms and conditions of the contract, the following words shall have the meaning herein assigned to them, unless the subject or context otherwise requires:

- (a) The "PURCHASER" shall mean the Haryana DISCOMs (DHBVNL /UHBVNL) or their authorized agent and shall include their Successors in office, and assigns.
- (b) The "SUPPLIER" shall mean M/s \_\_\_\_\_ and shall include the supplier's legal representatives, successors, and assigns.
- (c) "MANUFACTURERS: \_\_\_\_\_ shall mean \_\_\_\_\_ M/s \_\_\_\_\_ a \_\_\_\_\_ and shall include their legal representatives, successors, and assigns.
- (d) "MATERIAL" all the materials to be supplied by the supplier under the contract as per clause of material specifications, prices etc.
- (e) 'SPECIFICATION' shall mean and include the specifications as detailed in the attached herewith and Drawings attached thereto as well as samples and patterns, (if any).
- (f) The 'SITE' shall mean and include the lands and buildings over/under/upon and in which the materials are to be installed and used in accordance with the terms and conditions.
- (g) 'PLACE OF DELIVERY' shall mean the place of delivery at which the supplier is responsible to deliver the material at the contract price as specified in the clause "Material-Specification: Price etc.
- (h) 'COMMERCIAL USE' shall mean the use to which the material can commercially be put.
- (i) 'MONTH' shall mean a calendar month.
- (j) 'THE TERMS' F.A.S., F.O.R., F.O.B., C.I.F. and other shipping/ despatch terms as used herein, shall have meaning in accordance with their uses in India.
- (k) 'WORK' shall mean and include supply of all the materials, plants and equipment and rendering of other services by the supplier under this contract.
- (l) 'ACT' shall mean the Companies Act 1956 and shall include any statutory amendments,



- Modifications or re-enactment thereof for the time being in force.
- (m) 'Haryana DISCOMs' shall mean the UTTAR HARYANA BIJLI VITRAN NIGAM LIMITED /DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED as incorporated under Companies Act 1956 and shall include their successors and assigns.
- (n) 'MANAGING DIRECTOR' shall mean the Managing Director of the NIGAM (DHBVNL/UHBVNL) duly appointed by the Govt.
- (o) 'CONSIGNEE' shall mean the officer to whom the materials is required to be dispatched or the person specified in the purchase order.
- (p) 'CONTRACT' shall mean the Notice Inviting Tender, Instructions for tenderers, Tender Forms, terms and conditions of contract with their annexures and purchase order/ acceptance of offer/Tender/Rate Contract.
- (q) 'DRAWING' shall mean the drawing/drawings annexed to the specification (if any) or as approved by the purchaser.
- (r) 'PURCHASE AUTHORITY' shall mean the officer signing the acceptance of tender and shall include any officer who has authority to execute the relevant contract on behalf of the purchaser.
- (s) 'PURCHASE ORDER' shall mean an order of supply of material including the acceptance of the tender.
- (t) 'ANNEXURE' shall mean the Annexure to the terms and conditions.
- (u) 'ACCEPTANCE OF TENDER' shall mean the letter or memorandum communicating to the supplier the acceptance of his offer (Tender) and shall include advance acceptance of his offer i.e. Letter of Intent or Rate Contract.
- (v) 'TEST' shall mean such test as is prescribed by the Indian Standards Institution or by the Haryana DISCOMs and/or considered necessary by the authorized agents of the purchaser, whether conducted/performed or made by them or any other agency acting under their directions.
- (w) 'DELIVERY' shall be deemed to take place on delivery of the material in accordance with the terms and conditions of the Contract after test and inspection by the purchaser or his authorized agent, to the consignee.
- (x) D.G.S & D shall mean the Director General of Supplies and Disposals, Government of India.
- (y) DS&D shall mean the Director Supplies & Disposal, Haryana.

## 2. PARTIES.

The parties to the contract are the supplier and the purchaser, Legal address of the parties to the Contract is under:

Supplier M/s \_\_\_\_\_

Purchaser: Dakshin Haryana Bijli Vitran Nigam (Hisar)/UTTAR Haryana Bijli Vitran Nigam (Panchkula)





For all purposes of the contract including the arbitration there under, the address of the supplier mentioned above, shall be the address to which all communications addressed to the supplier shall be sent, unless the supplier has notified a change by a separate letter containing no other communication and sent by a Speed Post (Acknowledgement Due) to the purchaser. The supplier shall be solely responsible for the consequences of an omission to notify the change of address in the manner aforesaid.

**3. AUTHORITY OF THE PERSON SIGNING THE CONTRACT ON BEHALF OF THE SUPPLIER.**

The person who has signed these Tender papers (including the terms and conditions) has got authority to sign on behalf of the supplier. It is discovered at any time that the person so signing had no authority to do so, the purchaser without prejudice to any other right or remedy available to him may, cancel the contract and hold such person liable to the purchaser for all costs and damages arising from the cancellation of the contract including any loss which the purchaser may sustain on account of such purchase.

**4. RESPONSIBILITY OF THE SUPPLIER FOR EXECUTING THE CONTRACT.**

**(i) RISK IN MATERIAL**

The supplier shall execute the contract in all respects in accordance with these terms and conditions. The material and every constitute part thereof, whether in possession or control of the supplier, his agents or servants or a Carrier or in the joint possession of the supplier, his agents, servants and the purchaser, shall remain in every respect at the risk of supplier until its actual delivery to the consignee at the stipulated place or destination. The supplier shall be responsible for all loss, destruction, damage or deterioration of or to the material from any cause whatsoever while the material after test and inspection is awaiting dispatch or delivery in course of transit from the supplier to the consignee. The supplier shall alone be entitled and responsible to make claims against the carrier in respect of non delivery, mis-delivery, short delivery, loss, destruction, damage or of the deteriorated material entrusted to such carrier by the supplier for transmission to the consignee.

**(ii) CONSIGNEE'S RIGHT OF REJECTION**

Notwithstanding any approval which the purchaser may have given in respect of the material, it shall be lawful for the consignee to reject the material or any part thereof on behalf of the purchaser within a reasonable time after actual delivery thereof to him at the place or destination specified in Annexure 'B' if the material or any part or portion thereof is not in all respects in conformity with the terms and conditions of the contract whether on account of any loss, deterioration or damage before dispatch or delivery or during transit or otherwise howsoever.

The provision contained in clause 14 (vi) below relating to the removal of material rejected by the purchaser or his authorised agent shall, mutatis mutandis, apply to material rejected by the consignee as herein provided.

**(iii) SUBLETTING AND ASSIGNMENT:**

The supplier shall not save with the previous consent in writing of the purchaser sublet, transfer or assign the contract or any part thereof or interest therein or behalf or advantage thereof in any manner whatsoever.



## 5. ASSISTANCE TO SUPPLIER

The supplier shall be solely responsible to procure any raw material, license or permit required for the fulfillment of the contract. Any assistance for the procurement or attempt to tender assistance in the matter aforesaid, shall not be construed or constitute any promise, undertaking or assurance on the part of the purchaser regarding the procurement of the same to effect any variation in the rights and liabilities of the parties under the contract.

## 6. SECURITY DEPOSIT

- i) The earnest money furnished by the successful tenderers to whom the purchase order/ contract is allotted shall be refunded within 7 days from the verification received from the concerned Bank of performance guarantee as per contract (performa enclosed as **Annexure-VI**) by the accounts wing/DDO. The earnest money of lowest (L-2) shall be released after submission of performance Bank Guarantee by the successful bidder i.e. L-1. For remaining participating firms, EMD shall be refunded after finalization of the procurement case.
- ii) BG shall be retained by the purchaser for the period valid for 90 days after the expiry of warranty period as per clause of 'WARRANTY'.
- iii) No claim of the supplier shall lie against the purchaser either in respect of interest or any depreciation in the value of security deposit.
- iv) If, the supplier fails or neglects to observe or perform any of his obligations under this contract, it shall be lawful for the purchaser to forfeit at his absolute discretion, the Available EMD shall be forfeited and BG shall be encashed besides invoking clauses no. 21 & 28 i.e "Termination of Contract for default" & "Blacklisting of Firm" respectively.

The ibid forfeiture of EMD and encashment of BG shall be without prejudice to the right of the purchaser to recover any further amount of any liquidated and/or other damages, undue payment or overpayment made to the supplier under this contract and / or any other contract.

## 7. MATERIAL, SPECIFICATIONS, PRICES, ETC.

- i- The supplier shall supply the quantities of different items of material within the NIT of the best quality, workmanship and strictly in accordance with the prescribed specifications (**Annexure A**) and rates shown against each, unless any deviation in specification has been expressly pointed out in the purchase order.

The rates offered by the supplier and subsequently finalized shall remain Variable / FIRM as specified in Particular Conditions of Schedule-D (Part-II) of NIT documents.

### ii- Periodical Assessment of Rate and Undertaking for Price Fall.

#### a) Periodical Assessment of Rate:

Since the Rate Contract is for one year thus the rates as finalized will be assessed/verified by the Nodal Agency periodically. In case a downward trend in their market rates are observed. The Nigam shall have the right to review the rates time to time.

#### b) Price Fall Clause:

- i) The prices charged for the material supplied under the rate contract by the firm shall in no way exceed the lowest price at which the firm sales the material to any person/organization Including the purchaser or any other department of the central Govt. or any Deptt. of the State Govt. or any Statutory Undertaking of the Central or



State Govt. as the case may be during the delivery period till performance of all supply orders placed during the currency of the rate contracts is completed.

- ii) If at any time during the said period, the firm reduces the rates of the material as contained/ described in the contract or offer to sell such material to any person / Organization including the purchaser or any Deptt. of Central Govt. or any Deptt. of the State Govt. or any Statutory Undertaking of the Central or State Govt. as the case may be, at price lower than the price chargeable under the rate contract, shall forthwith notify such reduction / sale or offer to sale to the Nigam and the price payable under the rate contract for the material supplied after the date of coming into force of such reduction or sale offer to sale, shall stand correspondingly reduced.
- iii) The firm shall furnish the following certificate to the concerned Consignee's along with each bill against the rate contract:-

"I / we certify that there has been no reduction in sale price of the material of description identical to the material supplied to Nigam under the rate contract herein and such material has not been offered and sold by me / us to any person / organization including the purchase of any Deptts. of the Central Govt., any Deptts. of the State Govt., any statutory undertaking of the Central or State Govt. as the case may be upto the date of bill/ date of completion of supplies against all supply orders placed during the currency of the rate contract at prices lower than the prices charged to Nigam under the rate contract".

8. **SAMPLE :-** This clause shall be applicable as specified in Particular conditions of Schedule-D (Part-II)

#### 9. (i) DELIVERY

The supplier shall deliver the material in accordance with the terms and conditions of the contract at the time/times and at the place/places and in the manner specified in the Annexure 'B' attached thereto. In case the due date of delivery in terms of delivery schedule falls on a holiday including Sunday or holiday is subsequently declared on that date, the firm shall be required to complete the supply by the first working day falling next to the due date.

- (ii) **TIME FOR AND DATE OF DELIVERY; THE ESSENCE OF THE CONTRACT.**

The time for and the date of delivery of the material stipulated in the Annexure 'B' purchase order shall be the essence of the contract and delivery must be completed not later than the date (s) as specified in Annexure 'B'/purchase order.

- (iii) **NOTIFICATION OF DELIVERY:**

Notification of delivery of dispatch in regard to each and every consignment shall be made to the purchaser and respective consignees. The supplier shall supply to consignee a packing account and full details of the contents of the package and quantity of material in order to enable the consignee to check the material on arrival at destination.

- (iv) **Early Supplies:-** This clause shall be applicable as specified in Particular Conditions of Schedule- D (Part-II).

- (iv) **DAMAGES FOR DELAY IN DELIVERY:**

The delivery of material as per the Annexure "B" attached to the Terms and Conditions of Contract (Schedule 'D') shall be the essence of the contract between the supplier and the Nigam and the delivery of such consignment must accordingly be



insisted upon the date it is due in terms thereof.

No supplies/consignments received after the due date, on which they were actually due according to the terms of the purchase order, shall be accepted by the consignee except, with the approval of the purchasing authority.

In case the purchasing authority decides to accept a delayed supply, the supplier shall be liable to pay penalty @ one half of one percent per week or part thereof of the value of goods so delayed subject to a maximum of 5% of the total value of the delayed supplies. In case the delivery schedule provides lot wise delivery of material, lot wise penalty shall be imposed.

(vi) **PASSING OF A PROPERTY:**

Property in the material shall not pass to the purchaser unless and until the material has been delivered to the consignee, in accordance with the terms and conditions.

(vii) **TAKING OVER CERTIFICATES:**

The consignee (s) shall issue a taking over certificate after the material has been received at site (s), taken into possession, inspected, counted, measured and the supplier has supplied the copies of tests and inspection-certificate, if any, vide clause-14 "Test and Inspection".

**10. FORCE MAJEURE:**

The supplier shall not be liable for any loss or damage due to delay in manufacture or delivery of the material for reason arising out of compliance with regulations, orders or instructions of Central/ State Govt., Acts of God, acts of Civil and Military authorities, fires, floods, strikes, Lockouts, freight embargoes, war-risk, riots and civil commotion.

Whenever the supplier is not in a position to supply the material within the delivery period and he wants extension in the due date (s) of delivery under this clause, he will request for such extension of the delivery period alongwith all necessary evidence, before the expiry of the scheduled date(s) of delivery. In no case, the delivery period shall be extended under this clause, in case the request is received after the due date of delivery has expired. Extension in the delivery period may be granted only for the period for which the completion of the work is proved by the supplier to have been delayed for circumstances mentioned in this clause.

In all such cases, the Nigam shall have the option to accept any portion of the balance material and cancel the order for the rest, provided, however, if any material had been manufactured exclusively for the purchaser under this contract prior to the commencement of the force majeure circumstances, it shall be accepted by the purchaser and secondly, the cancellation will be without any liability for damages on the part of the supplier.

The decision of the purchaser in all matters under this clause shall be final and binding on the supplier.

Non-availability of raw material or any other similar cause shall not be considered as a force majeure circumstance.



11. **WARRANTY:** - This clause shall be applicable as specified in Particular Conditions of Schedule- D (Part-II).
12. **DRAWINGS :-** This clause shall be applicable as specified in Particular Conditions of Schedule- D (Part-II).
13. **MISTAKES IN DRAWINGS:** This clause shall be applicable as specified in Particular Conditions of Schedule- D (Part-II).
14. **TESTS AND INSPECTION:**

The material shall be inspected and tested by the purchaser or his authorised agent before dispatch unless dispensed with in writing by the purchaser. The Supplier shall give to the purchaser at least 10 days advance notice from the date of readiness of material for such inspection and test.

The Inspection call will be generated in a pre-specified format as per **Annexure – IV**.

The vendor /supplier shall also provide a copy of approved QAP, drawings along with the inspection call. Vendor / supplier should give it in writing that he is ready for the inspection.

On receipt of the advance notice from the supplier offering the material for inspection the purchasing authority will get the material inspected and issue the dispatch authorization within 20 days. In case the Inspecting Officer finds on arrival at the supplier's premises that the material was not ready for inspection and that the notice given by the supplier was unfruitful, the firm shall be liable to bear actual expenditure incurred by the Nigam on this account plus a fixed penalty of Rs. 20, 000/- for each such call made by the supplier. In addition to above a fixed amount of Rs. 10,000 per officer per-day would also be payable by the bidder in case inspecting officer deputed by Nigam and in case of 3<sup>rd</sup> party inspector, the amount of bills submitted by them. In case of joint inspection, the bidder shall be liable to pay Rs. 10,000 per man-day for the Nigam's inspector and amount of actual bills submitted by the 3<sup>rd</sup> party agency.

**In case the material offered for inspection fails in 1st inspection, the Nigam will have the right to levy a penalty at 0.25 % of the value of offered material. In case the material offered for inspection fail during the 2<sup>nd</sup> inspection, the Nigam will have the right to increase the penalty to 0.5% of the value of offered material. In case, the material offered fails during the 3<sup>rd</sup> and final inspection also, the firm will be liable for penal action viz. encashment of BG, debarring/ blacklisting in future and no further opportunity for inspection would be provided to the supplier firm.**

i) **FACILITIES FOR TESTS AND INSPECTION:**

The Supplier shall, at his own expense, afford to the Purchaser or his authorised agent, all reasonable facilities and such accommodation as may be necessary for such tests and inspection. The Purchaser or his authorised agent shall have full and free access

at any time, during the execution of the contract to the supplier's work for the purpose aforesaid, and he may require the Supplier to make arrangement for inspection of the material or any part thereof at his premises or at any other place specified by the Purchaser or his authorised agent.

- ii) The Supplier shall provide, without any extra charges, all materials, tools labour and assistance of every kind which the Purchaser or his authorised agent may demand of him for any test and inspection. The purchaser or the authorised agent,





- shall in his sole judgment, be entitled to remove for tests and inspection any of the material to any premises other than his (Supplier's) premises.
- iii) **LIABILITY FOR COSTS OF LABORATORY TEST:**  
In the event of rejection of material or any part thereof by the purchaser or his authorized agent which is removed to the Laboratory or other place of test, the Supplier, on demand, shall pay to the Purchaser all costs incurred in such removal.
- iv) **METHOD OF TESTING:**  
The Purchaser or his authorized agent shall have the right to put all the material or part thereof to such tests as he may think fit and proper. The supplier shall not be entitled to object on any ground whatsoever to the method of testing by the purchaser or his authorized agent.
- v) The Supplier shall mark or permit the purchaser or his authorized agent to mark all the approved material with a recognized Purchaser's mark. The material which cannot be so marked, shall, if so, required by the Purchaser or his authorized agent, be packed in suitable packages or cases which shall be sealed and marked with such mark.
- vi) **REMOVAL OF REJECTED MATERIAL:**  
If any material is rejected by the Purchaser or his authorized agent after tests and inspection or by the consignee, the material so rejected shall be removed from the premises of rejection by the supplier at his own cost. Such rejected material shall under all circumstances lie at the risk of the Supplier from the moment of such rejection; and if such material is not removed by the Supplier within a period of 45 days, from the date of notice given by the consignee/Purchasing Department for lifting of such material, Purchaser or his authorized Agent or consignee may dispose of such material in any way at the Supplier's risk and cost and retain such portion of the proceeds as may be necessary to cover any expense incurred in connection with such disposal and shall also be entitled to recover handling and storage charges for the period during which the rejected material is not removed.
- vii) **CERTIFICATE OF TEST & INSPECTION**  
When the test and inspection have been satisfactory carried out by the purchaser or his representative, the purchaser or his authorized representative shall issue a communication to that effect, the material will then be dispatched by the Supplier according to dispatch instructions of the Purchaser or his authorized representative vide Clause-19 Dispatch Instructions.
- viii) **POST RECEIPT INSPECTION:**  
The material after receipt in the stores of the Nigam shall be subjected to inspection for its conformity to the specification by a representative of the Nigam in the presence of representative of the contractor/supplier after issuance of e-mail notice/telephonic communication to the supplier/ contractor. In case the firm fails to depute a representative on the specified date, the Nigam would be free to get the material checked in the absence of firms representative for which the firm would have no reason to protest at any stage and would be fully responsible of the outcome.
- ix) **TYPE TEST CONDITIONS:** This clause shall be applicable as specified in Particular Conditions of schedule-D (Part-II)
- x) **Non – conformance of material with provisions of technical specification:** - The material offered/received after the inspection by the authorized inspecting officer may again be subjected to the test for losses or any other parameter from any Testing House/in-house technique of the Nigam & the results if found deviating, un-





acceptable or not complying to approved GTP, the lot shall be rejected and bidder shall arrange to supply the replacement within forty-five (45) days of such detection at his cost including to and fro transportation. In addition to this, a penalty @ 5% of cost of the rejected lot of material shall be imposed. The rejected material shall be lifted back by firm only after replacement with fresh material or by submission of additional BG of equivalent to the cost of material. This BG shall be released when the replacement of material with fresh material received in the Nigam Stores and material is accepted by the Nigam.

#### 15. Goods & Service TAX

The Purchaser shall pay GST at the prescribed rates (if applicable) on the production of the following Certificates by the supplier in triplicate:

- i) Certified that the transaction in which the GST has been claimed has been/will be included in the return submitted/to be submitted to the Taxation authorities for the assessment of GST and amount claimed from the Haryana DISCOMs has been/shall be paid to the Tax authorities.
- ii) Certified that the goods on which the GST has been charged in Bill No. \_\_\_\_\_ dt. \_\_\_\_\_ for Rs. \_\_\_\_\_ have not been exempted under the GST Act 2017 or the rules made thereunder and the charges on account of GST on these goods are correct under the provision of the relevant Act or the Rules made thereunder.
- iii) Certified that we shall always indemnify the Haryana DISCOMs in case it is found at a later stage, that wrong or incorrect payment had been recovered on account of GST/to be paid by us.
- iv) Certified that we are registered as a dealer under the GST and our GSTIN No. is \_\_\_\_\_.

Provided that in respect of the item at Sr. \_\_\_\_\_ and of clause – 7 which are required by the Nigam for use on the generation and distribution of electrical energy to the Public, no GST shall be payable as they are exempted under GST Act 2017.

#### 16. DOCUMENTATION :

- i) All bills and/or invoices whether in respect of an advance payment or full payment, shall contain complete details of Code No., name of the item, description of material supplied, quantity supplied, rates, details of extra claims, etc. as well as the name of the consignee who received the material, shall be submitted in triplicate, duly accompanied by the receipted good challan, inspection note/test certificate in original, prescribed GST certificates, documentary evidence regarding transportation of the material from the place of manufacturing to the contractor and then from contractor to the Nigam, and E.way bill.
- ii) All freight charges whether paid or to pay, and whether chargeable to the Nigam or included in the quoted price, shall be shown in the invoice separately.
- iii) All bills and/ or invoices shall be sent by the supplier to:

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for payment.

**17. TERMS OF PAYMENT :** This clause shall be applicable as specified in Particular Conditions of Schedule-D (Part-II)

**18. NEGLIGENCE:**

If the supplier shall neglect to execute the supply contract with due diligence and expedition or shall refuse or neglect to comply with any reasonable orders given in writing by the purchaser or his authorized agent in connection with this contract or shall contravene this provision of the contract, the purchaser may give 15 days notice in writing to the supplier to make good the failure, neglect or contravention complained of and should the Supplier fail to comply with the notice within the above said time from the date of service thereof (in case of failure, neglect or contravention capable of being made good, within that time or otherwise within such time as may be reasonably necessary for making it good), then in such case, the purchaser shall be at liberty to take the work wholly or in part out of Supplier's hand and re-contract at a reasonable price with any other person (s). in such event, it shall be lawful for the purchaser to retain any balance which may otherwise be due by him to the Supplier on any account, and apply the same towards the execution of the whole of balance of the supply contract so re-contracted, as aforesaid, if no such balance is due by him to the supplier or if due, is not sufficient to cover the amount thus recoverable from the supplier, it shall be lawful for the purchase to recover the whole or the balance of the amount from the supplier by action at law or otherwise. The remedy under this clause will be in addition to and without prejudice to right available to the purchaser under other clause of these terms and conditions.

**19. DESPATCH OF MATERIAL AND DESPATCH INSTRUCTIONS:**

The supplier shall be responsible to obtain complete Dispatch instructions from the purchaser before the dispatch of each consignment.

The supplier shall sufficiently pack at his own cost the material for transit so as to ensure this being free from loss or damage on arrival without opening the packages while in transit at their destination. All containers in which the material is supplied shall be non returnable.

**20. REPLACEMENT AND REJECTION:**

Material found sub-standard or defective or not conforming to the prescribed specification in any manner, at consignee's end shall not be accepted and intimation to this effect shall be given to the supplier, the purchasing authority and the Controller of Stores by the consignee. The purchasing authority shall promptly take up the matter with the supplier and ask him to rectify or replace the defective/sub-standard material forthwith and in any case within a period of 45 days from the date of intimation about such defective material by the stores wing, failing which, the Nigam shall reserve the right to get the defect rectified at the supplier's cost or to withhold the amount equal to cost of defective material. The supplier shall also be intimated that all expenses involved in the replacement by way of handling, transportation, storage, etc. shall be to their account. The payments so withheld shall be released after the receipt of repaired/replacement material. In case, the supplier still does not respond for lifting the defective material, despite continuous follow-up, the procedure as prescribed in as per clause no. 21 read with sub-clause 28.1 (a & b) shall be invoked for termination of contract, encashment of BG, imposing LD charges @ 5% of the value of defective/ rejected/ undelivered material and initiation of action for blacklisting etc. Even after expiry of 90 days, if there is no response from the firm, Nigam can deduct the cost of the defective equipments/material from the pending liabilities of the firm, including encashment of the BG of the firm, available with Nigam against the same



P.O. or in other cases.

If there is sufficient financial cover against the same or other P.O.s available then the principal supplier can lift the material against the financial cover of same P.O.s. If the financial cover falls short of cost of material to be lifted for repair/replacement than either he would have to deposit the BG of the balance cost of the equipments through DD or cost thereof in cash.

In respect of the defective/sub-standard supplies, the date on which such a supply is replaced shall be reckoned as the effective date of delivery there against and the delay shall be worked out accordingly with reference to the date on which the supply was due as per the terms of contract, for the purpose of determining penalties/liquidated damages recoverable under Clause 9 (v).

## 21. TERMINATION OF CONTRACT FOR DEFAULT

21.1 The purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, terminate the contract in whole or in part:

- a) If the supplier fails to deliver any or all of the stores within the time period(s) specified in the contract, or any extension thereof granted by the Purchaser; or
- b) If the supplier fails to perform any other obligation under the contract within the period specified in the contract or any extension thereof granted by the purchaser.
- c) If the supplier, in the judgment of the purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the contract (The definition of corrupt or fraudulent practices defined under clause-25).

21.2 In the event the purchaser terminate the contract in whole or in part. Available EMD submitted by the firm/supplier shall be forfeited and available BG shall be got encashed towards recovery of LD Charges and any other dues from the firm.

## 22. SET-OFF:

Any sum of money due and payable to the supplier under the contract (including Security deposit returnable to the supplier) may be appropriated by the purchaser and set-off against any claim of the purchaser for the payment of a sum of money arising out of or under this contract or any other contract entered into by the supplier with the purchaser.

## 23. SUPPLIER'S DEFAULT LIABILITY :

In the event of breach of any these terms and conditions by the supplier, the purchaser can terminate the contract without Notice to the supplier at any stage and the supplier shall have no claim whatsoever on the purchaser on this account. But the supplier shall be liable to pay to the purchaser a sum equivalent to 5% of the value of the undelivered material as liquidated damages and not as a penalty.

## 24. LAWS GOVERNING THE CONTRACT

- (i) This contract shall be governed by the Laws of India for the time being in force.
- (ii) Irrespective of the place of delivery place of performance or place of payment under the contract, the contract shall be deemed to have been made at the place from which the acceptance of tender has been issued.
- (iii) Jurisdiction of courts: The courts of the place from where the acceptance of tender has been issued shall alone have exclusive jurisdiction to decide any dispute arising out



of or in respect of the contract.

**25. Corrupt or Fraudulent Practices**

The Nigam requires that Tenderers/ Suppliers/ Contractors observe the highest standard of ethics during the procurement and execution of Nigam contracts. In pursuance of this policy, the Nigam:-

- (a) Defines, for the purposes of this provision, the terms set forth as follows:
  - (i) “corrupt practice” means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution: and
  - (ii) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Nigam, and includes collusive practice among Tenderers (prior to or after tender submission) designed to establish tender prices at artificial, non-competitive levels and to deprive the Nigam of the benefits of free and open competition;
- (b) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
- (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a Nigam contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Nigam contract.

**26. PATENT RIGHTS**

The supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in India.

In the event of any claim asserted by a third party of infringement of copyright, patent, trademark or industrial design rights arising from the use of the Goods or any part thereof in the Purchaser’s country, the supplier shall act expeditiously to extinguish such claim. If the supplier fails to comply and the Purchaser is required to pay compensation to a third party resulting from such infringement, the supplier shall be responsible for the compensation including all expenses, court costs and lawyer fees. The Purchaser will give notice to the supplier of such claim, if it is made, without delay.

**27. SETTLEMENT OF DISPUTES**

If any dispute or difference of any kind whatsoever arises between the Purchaser and the Supplier in connection with or arising out of the Contract, the parties will make every effort to resolve amicably such dispute or difference by mutual consultation.

If, after thirty (30) days the parties failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of the matter may be commenced unless such notice is given.



## 28. Blacklisting of the Firms:

As the purchase order becomes a valid contract between the purchaser and supplier on the date of its issue, no further changes in the terms and conditions thereof are permissible and any request received in this regard from the supplier should be summarily rejected, making it clear to supply the goods strictly in accordance with the terms and conditions of the contract. It should be noted that such a liability can be enforced on the supplier only if the purchase order does not contain any term or condition contrary to what had been quoted in the supplier's tender. Once this is ensured, any attempt by the supplier to back out of his commitment should be taken seriously and his earnest money deposited be forfeited forthwith, without prejudice to any further legal remedies open to the Nigam under the relevant laws. Where necessary, the case of supplier illegally backing out of the commitment, should also be put up to the Board of Directors for consideration and to decide for black-listing of the firm and damages, if any, to be recovered

### 28.1. Procedure for Blacklisting of firm

*In case the supplier intends to illegally back out of the commitment, the steps for blacklisting of the firm, besides enforcement of damages recoverable under the law will be taken as per procedure given below:-*

- a) *A notice shall be served by the purchasing department on the supplier by registered post/speed post bringing his defaults to his notice and asking him to complete all pending supplies / or to settle dispute within a period of 15 days from the date of issue of Notice.*
- b) *In case the firm fails to comply with the notice(s), a show Cause notice of 21 days shall be issued why the firm/supplier/contractor should not be blacklisted. In the Show Cause Notice complete details of the case, default committed by the firm/supplier/contractor and details of notices issued by the Nigam shall be incorporated.*
- c) *In case the supplier/firm/contractor fails to comply with the notice issued for blacklisting or does not respond to show cause notice or the reply as submitted is not found justified/convincing. The contract with the firm/supplier shall be terminated inter-alia taking other action as per regulation no. 20 & further the firm may be blacklisted with the approval of BODs.*
- d) *The period of blacklisting of the defaulting firm/ supplier/contractor will be approved upto 3 years by BOD's and shall be notified to all Power Utilities in the country and the names of such blacklisted supplier/contractor would also be put on the website of the Nigam*

## 29. ARBITRATION

All the matters, questions, disputes, differences and / or claims arising out of and /or concerning and /or in connection and /or relating to this contract whether or not obligations of either or both parties under this contract be subsisting at the time of such dispute and whether or not this contract has been terminated or purported to be terminated or completed, shall be referred to the Sole Arbitrator to be nominated by Managing Director/DHBVNL or UHBVNL (as the case may be). The Award of the Arbitrator shall be final and binding on the Parties to this contract. Provisions of the Arbitration & conciliation Act, 1996 and the Rules made there under, the statutory modifications thereof for the time being in force, shall be deemed to apply to the Arbitration proceedings under this clause.

Place :





Date :

Signature of the Supplier.

**SCHEDULE 'D'**

**(Part-II. Particular Conditions of Contract)**

**UTTAR/ DAKSHIN HARYANA BIJLI VITRAN NIGAM LIMITED**

**PARTICULAR TERMS AND CONDITIONS FOR PROCUREMENT OF EQUIPMENT STORES AND OTHER MATERIAL UNDER THE RATE CONTRACT**

**The below mentioned terms & conditions shall be applicable in addition to the terms & conditions mentioned in Part-I of Schedule D**

**1) PRICE :-**

The prices quoted shall be 'Variable' as per latest applicable IEEMA formula and 'FOR' destination basis anywhere in Haryana. The breakup of prices quoted viz. Ex-work prices, freight and insurance, GST etc. should be clearly given in schedule of prices as per details in the enclosed Performa, which is a must. The base date for updating the price will be first working day of the month, one month prior to the date of tender opening without any ceiling.

**2) SAMPLE : Not applicable.**

**3) Delivery:**

**i) Acceptance Early Supplies**

a) In case the material is required early by the Nigam and the purchasing authority requests for the same, then the payment and IEEMA would be regulated as per PO provisions i.e. actual delivery (physical) date shall be considered as due date of delivery.

b) in case any firm supplied the material earlier than the actual due date of supply, then the payment procedure/terms shall remain the same as per terms and conditions and lots due date mentioned in the relevant PO/work order. Moreover, in case of price variation, the lowest IEEMA between the actual (physical) date of delivery and scheduled date of delivery would be made applicable.

**ii) Acceptance of delay supply :-**

In case of delayed supply (beyond overall delivery schedule), the same may be considered and accepted by the purchaser with levy of penalty as per provision of PO and for computing the price variation, the lowest IEEMA indices announced by IEEMA during the intervening period from the due date of supply and the date of actual (physical) delivery, would be made applicable.

In case of delayed lots, for computing the price variation the lowest IEEMA indices announced by IEEMA, during the intervening period from the schedule date of delivery to actual (physical) date of delivery, would be applicable.

**4) Warranty:-**

The supplier shall be made responsible to replace free of cost, with no transportation or insurance-cost to the Nigam, up to the destination, the whole or any part of the material which in normal and proper use proves defective in quality or workmanship, subject to the condition that the defect is noticed within 78 months from the date the material is received by the consignee or 72 months from the date of installation whichever ever period may expire earlier. The consignee or any other





officer of the Nigam actually using the material will give prompt notice of each such defect to the supplier as well as the Purchasing authority and the Controller of Stores. The replacement shall be effected by the supplier within a reasonable time, but not, in any case, exceeding 45 days. The supplier shall also arrange to remove the defective supply within a reasonable period but not exceeding 45 days from the date of issue of the notice in respect thereof, but only after replacement of defective material. Upon the firm failing to do so, the damages/defects may be got rectified by the Nigam and the cost adjusted from the firm's pending dues and/or security deposit against this or any other contract in force and the balance left be got deposited by the supplier. The Nigam may also withhold the amount equal to cost of defective material.

The warranty for 78/72 months shall be one time. In addition to above, warranty should be extended by the supplier for the period for which the service was not rendered by the material/equipment supplied by the supplier which would be allowable for one occasion only. In case of recurrence, the material/ equipment shall have to be replaced afresh or cost of the material shall be recoverable from the pending liabilities of the supplier/contractor towards Nigam.

After completion of overall warranty period, if it is found that any material defective/ damaged within warranty period is still lying in the store/field/with the firm then equivalent amount of cost of material as BG shall be accepted. After receipt of fresh BG, the old BG should be released.

**In case of breach of contractual obligations with reference to non responding for repairing /replacement of defective material, notices of 15 days & 21 days shall be issued to the firm and in case of still persistence of default, the Nigam shall reserve the right to terminate the contract, encashment of BG towards recovery of damages and further initiation of action for blacklisting**

**5) DRAWINGS:-**

**a) Deleted**

**b) Procedure to be followed where specification/design of the product is not standardized but prepared for specific use of Nigam:**

- i- The successful bidder shall submit the drawing as per Nigam's specification/design within 30 days from the date of issue of Rate Contract.
- ii- The required type test certificates shall be submitted by the successful bidder within 90 days from the date of issue of Rate Contract.
- iii- The purchase Department shall approve the drawings within 10 days from the date of receipt of type test certificate except in case of observance of deviations there against.
- iv- Any Delay in the submission of the type test certificates beyond 90 days from the date of issue of Rate Contract will be to the supplier account.
- v- Time taken in any clarification of the Type Tests Certificates and drawings will be attributable to the supplier. In this case the delivery schedule shall commence from the date of approval of drawing OR 101<sup>st</sup> from the date of issue of Rate Contract whichever is earlier (In case of RC applicable for 1<sup>st</sup> P.O.).

**6) MISTAKES IN DRAWINGS:**

The supplier will be responsible for and shall pay for alterations of the material due to any discrepancies, errors or omissions in the drawings or other particulars supplied by him whether such drawings or particulars have been approved by the purchaser or



not. Mistakes in drawing will be set right by the Supplier after obtaining approval of the purchaser

**7) POST RECEIPT INSPECTION AND SAMPLE TESTING AFTER RECEIPT OF MATERIAL IN NIGAM STORES:- Not applicable.**

**8) TYPE TEST CONDITIONS:**

- i. In case of the firms, whose past supplies made to Haryana DISCOMs (DHBVN/UHBVN), testify the satisfactory performance of the equipment already supplied and type test certificates accepted there against are not more than five year old on the date of opening of tender, fresh type tests may not be required/asked for in case there is no change in the design. However, in such cases the firm shall supply the approved copy of drawings/GTPs and requisite type test certificates along with bid documents. In such cases, the commencement of delivery period shall be date of receipt of purchase orders meaning thereby no additional time shall be given to the firm for approval of drawings.
- ii. In all other cases, the firm/s shall be required to submit the type test certificates as per Nigam's Technical Specifications and relevant ISS along with the tender documents, which should not be more than five years old on the date of opening of tender. Alternatively, the firm/s shall submit an undertaking that the requisite type test certificates shall be submitted within 90 days from the date of issuance of RC. The purchaser departments shall approve the drawing and type tests within 10 days from the date of receipt all the requisite type test certificates.

In case any difference between ISS & Nigam technical specifications, the type test certificates (incorporating the remaining tests, if applicable) issued by NABL accredited testing houses/Govt. approved lab besides international testing house/labs like KEMA, KERI etc. will be supplied by the bidder within 90 days from the date of issue of Rate Contract.

The type test certificates should be as per IS with latest amendment which will be supplied by the firm for approval of drawing and GTPs, unless stated otherwise specifically.

**In case of delay in submission of detailed type test certificates beyond 90 days from the date of issue of RC, penalty @ 0.05% per day subject to maximum 2% of the contract value shall be imposed.**

**Note: Delay in submission of type test by firm shall not form the basis for relaxation/ extension in delivery schedule in any case.**

**9) TERMS OF PAYMENT:-**

Subject to any deductions which the purchaser may be authorized to make under this contract, the payment for the material shall be made as under:-

- (a) One hundred percent payment shall be made on 30th day from the date of receipt of material by the consignee or date of submission of documents i.e. bills/invoices in triplicate, receipted challans inspection report, prescribed GST Certificates and GST gate pass, wherever required etc., whichever is later.
- (b) **The Bank Guarantee of the value of 5% of the order value or estimated value of Rate Contract (where maximum value of rate contract (RC) is indicated, it will**



be on the basis of the same) [2% in case of Haryana based other firms/enterprises and 0.2% in case of Haryana Based micro and small enterprises (including khadi and village industries units) subject to fulfillment of conditions as per eligibility as notified by the Department of Industries & Commerce, Govt. of Haryana in its order no. 2/2/2016-4IBII (II) dated 20.10.2016.] for complete requisite period shall be furnished within 15 days from the date of issue of RC which should remain valid for 90 days after the expiry of warranty period (the BG shall be issued by any Nationalized /Private Bank in India, failing which:

- i) Penalty @ 0.05% per day of the value of BG with a ceiling of 2% of value of BG would be charged from due date of submission, till the BG or DD in lieu of BG is submitted by the firm.
- ii) In case the performance bank guarantee or DD in lieu of performance security is not submitted within 45 days from the date of issue of PO or the date if any stipulated by the purchasing authority, the Nigam reserve the right to cancel the PO/RC and initiate the action for allotment to L-2 firm.
- iii) In the event of receipt of material without the receipt of BG, amount equivalent to BG alongwith penalty shall be deducted from the payments due to the supplier. However, on receipt of requisite BG from the firm, the amount deducted in lieu of the BG only, shall be refunded without accrual of any interest thereon and amount of penalty so deducted shall not be refunded.

Further a rebate of 0.05 percent per day shall be availed of by the Nigam if payment is made earlier than the period specified. The rebate will be calculated on the payable amount.

The delay in payment to the suppliers beyond the stipulated credit period indicated in the supply order, unless supported by cogent reasons and approved by a higher authority, would attract penal interest on the defaulting amount @ Rs. 25/- per one lac per day of delay beyond the credit stipulated period. Payment of such interests would be brought to the notice of Administrative Secretary of the department and call for fixation of responsibility. In case of delayed supply duly accepted by the purchasing authority, no penal interest on the same shall be applicable.

In case the due date of payment in terms of payment schedule falls on a holiday including Sunday or holiday is subsequently declared on that date, the payment shall be released on the first working day falling next to the due date.

Place :

Date :

Signature of the Supplier.



Annexure-III

**PARTICULARS OF THE BIDDER**

1.	Name of the firm	
2.	Postal address.	
3.	Telephone No.	
4.	Fax No.	
5.	Email.	
6.	Type of organization:	
7.	Date of commencement of business.	
8.	Name of proprietor / Partners / Directors and their detail Bio-data.	Page _____ to _____ page
9.	Details of offices other than H.O./Controlling office and other infrastructure available.	Page _____ to _____ page
10.	Detailed organizational structure with background of key personnel.	Page _____ to _____ page
11.	Type of service being offered.	Page _____ to _____ page
12.	List of clients' alongwith their addresses and contact telephone. Fax Nos. and type of services offered and/or being offered to them. a) Electricity Companies/ Board. b) Others.	Page _____ to _____ page Page _____ to _____ page
13.	Details of Empanelment accreditation Electricity Board/Companies/other Client alongwith empanelment/ accreditation letter.	Page _____ to _____ page
14.	Balance sheet and P&L Accounts of past 3 financial years.	Page _____ to _____ page
15.	Letters/certificates for successful completion of work from Electricity Companies/ Board/other.	Page _____ to _____ page
16.	Details of any collaboration/ tie up with Indian/Overseas Agency/Organization.	Page _____ to _____ page
17.	Any other additional information/certificate.	Page _____ to _____ page
18.	Details of work force with the agency.	



ANNEXURE 'A' TO SCHEDULE 'D' (Part-I)

Specification No. CSC- 74-R-II/DH/ UH/P&D/2015-16

*TECHNICAL SPECIFICATION*

OF

**“12.5 MVA, 33 / 11 kV**

**Power Transformer”**

Month issue :

Common Specifications Committee

UHBVN & DHBVN





## TECHNICAL SPECIFICATION FOR 12.5 MVA 33/11 KV POWER TRANSFORMER

### 1.0 SCOPE

1.1 These specifications are to cover design, engineering, manufacture, testing/inspection before dispatch, forwarding, packing, transportation to site, insurance (during transit), of three phase, 50 Hz, 12.5 MVA, 33/11 KV step-down Outdoor ONAN Power transformers complete with all accessories/fittings, for use in sub-transmission and Distribution systems. The offered material shall be complete with all the accessories and components necessary for their desired / effective and trouble free operation. Such components shall be deemed to be within the scope of Bidders supply irrespective of whether those are specifically brought out in this specification and / or the commercial order or not.

#### 1.1.1 CLIMATIC CONDITIONS:

The equipment/material to be supplied against this specification shall be suitable for satisfactory operation under the following climatic Conditions

i)	Location	At various locations in the state of Haryana
ii)	Maximum ambient temperature ( $^{\circ}\text{C}$ )	60
iii)	Minimum ambient air temperature ( $^{\circ}\text{C}$ )	-5
iv)	Maximum average daily ambient temperature ( $^{\circ}\text{C}$ )	40
v)	Maximum yearly weighed average ambient temperature ( $^{\circ}\text{C}$ )	32
vi)	Maximum altitude above mean sea level (m)	1000
vii)	Minimum Relative Humidity (%)	26
viii)	Maximum Relative Humidity (%)	95
ix)	Average no of Rainy days/ year	120
x)	Average annual rainfall	900 mm
xi)	Maximum wind pressure	195 kg/m sq.

The equipment shall be for use in moderately hot and humid tropical climate, conducive to rust and fungus growth.

### 1.2 SPECIFIC TECHNICAL REQUIREMENTS (STANDARD CONDITIONS)

1.	Rated MVA (ONAN rating)	12.5 MVA
2.	No. of phases	3
3.	Type of Installation	Outdoor
4.	Frequency	50 Hz
5.	Cooling medium	Insulating oil
6.	Rated voltage:	
	a) High voltage winding	33 kV
	b) Low voltage winding	11 kV
7.	Highest continuous system voltage	36 kV
	a) HV Side	12 kV
	b) LV side	
8.	Type of tap changer	On-load tap changer



9.	Range tapings	+5% to -15% in 16 equal steps of 1.25% each on HV winding
10.	Neutral terminal to be brought out	On LV side only
11.	Impedance on rated MVA base at 75°C (12.5 MVA)	10% with tolerance limits as per IS
12.	Type of insulation and insulation level	Uniform
13..	One minute power frequency withstand test (KV rms)	33 kV 11kV 70 28
14.	Impulse withstand test voltage (KV Peak)	170 95
15.	Winding connection a) HV Side b) LV Side	Delta Star
16..	Winding material	Electrolytic Copper
17.	Vector group	Dyn 11
18..	Type of cooling	ONAN
19.	Neutral earthing	LV neutral shall be solidly earthed
20.	No load losses at rated voltage and frequency (kW)	11.0 (max.)
21	Copper Losses at Principal Tap 75°C at (KW)	72.0 (max.)

### 1.2.1 MAXIMUM TEMPERATURE RISE OVER AN AMBIENT OF 45°C

- a) Temperature rise of top oil (Measured by thermometer) 50°C
- b) Temperature rise of winding (Measured by resistance) 55°C

The rise in temperature of top-oil and winding given above shall be reduced as per Clause 3.2 & 3.3 of IS: 2026(part-I) in case of increase in Ambient above 50° C and an increase in altitude above 1000 m.

### 1.2.2 RATING & SERVICES

- a) Over load capacity As per IS:6600

### 1.2.3 NOISE LEVEL AT RATED VOLTAGE & FREQUENCY



As per NEMA Publication No. TR-I.

#### 1.2.4 MARSHALLING BOX

A metal enclosed, weather, vermin and dust proof marshalling box fitted with required glands, locks, glass door, terminal board, heater with switch, illumination lamp with switch etc. shall be provided with each transformer to accommodate temperature indicators, terminal blocks etc. It shall have a degree of protection of IP 55 as per IS:2147 (Refer Clause 3.12).

#### 1.2.5 Rejection of Power Transformer.

- i) In case during the test, the actual losses are found within guaranteed figures (as per approved GTPs/Drawings), the transformer shall be accepted without any advantage to the supplier / contractor for lower loss.
- ii) When actual losses during testing are found in excess of maximum guaranteed figures(as per approved GTPs/Drawings), the transformer shall be rejected.

#### 1.3 PERFORMANCE

- i) Transformer shall be capable of withstanding for two seconds without damage to any external short circuit, with the short circuit MVA available at the terminals.
- ii) The maximum flux density in any part of the core and yoke at rated MVA, voltage and frequency shall be such that the flux density under 12.5% over voltage condition shall not exceed 1.5 Tesla (max.).
- iii) Transformer shall under exceptional circumstances due to sudden disconnection of the load, be capable of operating at the voltage approximately 25% above normal rated voltage for a period of not exceeding one minute and 40% above normal for a period of 5 seconds.
- iv) The transformer may be operated continuously without danger on any particular tapping at the rated MVA  $\pm 12.5\%$  of the voltage corresponding to the tapping.
- v) The thermal ability withstand short circuit shall be demonstrated by calculation.
- vi) With combined voltage variation of +12.5% and frequency variation of -5%, the flux density shall not exceed 1.5 Tesla.
- vii) Transformer shall be capable withstanding thermal and mechanical stress caused by any symmetrical and asymmetrical faults on any winding.
- viii) DGA of oil shall be periodically monitored by the employer and the interpretation of DGA results shall be as per IEC – 599.
- ix) The transformers shall be capable of being loaded in accordance with IS:6600/IEC-354. There shall be no limitation imposed by bushings, tap changers etc. or any other associated equipment.
- x) Transformers shall withstand, without injurious heating, combined voltage and frequency fluctuations which produce the following over fluxing conditions:
  - i) 125% for 1 – minute
  - 140% for 5 – seconds
- ii) Bidder shall indicate 150% and 170% over voltage withstand time.

#### AUXILIARY POWER SUPPLIES

The following power supplies shall be available at site:

- i) AC, 3 phase, 400 volts, 50 Hz, earthed
- ii) AC, 1 phase, 230 volts, 50 Hz, earthed
- iii) 24V DC



#### 1.4 DRAWINGS/DOCUMENTS INCORPORATING THE FOLLOWING

##### **PARTICULARS SHALL BE SUBMITTED WITH THE BID**

- a) The contractor shall furnish, within fifteen days after issuing of Letter of Award, six copies each of the following drawings/documents incorporating name of project and transformer rating for approval.
- i) Detailed overall general arrangement drawing showing front and side elevations and plan of the transformer and all accessories including radiators and external features with details of dimensions, spacing of wheels in either direction of motion, net weights and shipping weights, crane lift for un-tanking, size of lugs and eyes, bushing lifting dimensions, clearances between HV and LV terminals and ground, quantity of insulating oil etc.
  - ii) Foundation plan showing loading on each wheel and jacking points with respect to centre line of transformer.
  - iii) GA drawings/details of bushing and terminal connectors.
  - iv) Name plate drawing with terminal marking and connection diagrams.
  - v) Wheel locking arrangement drawing.
  - vi) Transportation dimensions drawings.
  - vii) Magnetization characteristic curves of PS class neutral and phase side current transformers, if applicable.
  - viii) Interconnection diagrams.
  - ix) Over fluxing withstand time characteristic of transformers.
  - x) GA drawing of marshalling box.
  - xi) Control scheme/wiring diagram of marshalling box
  - xii) Technical leaflets of major components and fittings.
  - xiii) As built drawings of schematics, wiring diagram etc.
  - xiv) Setting of oil temperature indicator, winding temperature indicator.
  - xv) Completed technical data sheets.
  - xvi) Details including write-up of tap changing gear.
  - xvii) H.V. conductor bushing.
  - xviii) Bushing assembly
  - xix) Bi-metallic connector for connection to 'Wolf' ACSR conductor.
  - xx) Radiator type assembly



- b) All drawings/documents, technical data sheets and test certificates/results/calculations shall be furnished.
- c) Any approval given to the detailed drawings by the purchaser shall not relieve the contractor of the responsibility for correctness of the drawing and in the manufacture of the equipment. The approval given by the purchaser shall be general with over all responsibility of the manufacturer.

## 1.5 MISCELLANESOUS

- i) Padlocks alongwith duplicate keys as asked for various valves, marshalling box etc. shall be supplied by the contractor, wherever locking arrangement is provided.
- ii) Foundation bolts for wheel locking devices of transformer shall be supplied by the Contractor.
- 1.6 The equipment shall be delivered, erected and commissioned at site in case of turnkey contract executions.

## 1.7 SERVICES AND EQUIPMENT

The following is also in the Contractor's scope of work for turnkey executions only:

- i) Design of soak pit, cable trenches and foundations for transformers and other ground mounted equipment.
- ii) Construction of soak pit, cable trenches and foundations for transformers and other ground mounted equipment.
- iii) All the civil works.

## 1.8 SCHEDULES

All schedules annexed to the specification, shall be duly filled by the bidder separately.

## 1.9 NAME PLATE

Transformer rating plate shall contain the information as given in clause 15 of IS-2026 (Part-I). The details on rating plate shall be finalized during the detailed engineering. Further each transformer shall have inscription of Purchaser name and clear mention of "Property of UHBVN/DHBVN".

## 2.0 GENERAL TECHNICAL REQUIREMENT

### 2.1 CODES AND STANDARDS

- i) The design, material, fabrication, manufacture, inspection, testing before dispatch, erection, testing, commissioning and performance of power transformers at site shall comply with all currently applicable statutory regulations and safety codes in the locality where the equipment will be installed. The equipment shall also conform to the latest applicable standards and codes of practice. Nothing in this specification shall be construed to relieve the contractor of this responsibility.
- ii) Transformers shall conform to the current applicable standards and codes of practice as specified in clause no. 2.2.





- 2.2 The equipment, materials and service covered by this specification shall conform to the latest applicable provision of the following standards:

IS:5	Colour for ready mixed paints
IS:325	Three Phase Induction Motors
IS:325	New insulating oil for transformers, Switchgears
IS:1271	Classification of insulating materials for electrical machinery and apparatus in relation to their stability in services.
IS:2026(Part I to IV)	Power transformer
IS:2071	Method of high voltage testing
IS:2099	High voltage porcelain bushings
IS:2147	Degree of protection
IS:2705	Current transformers
IS:3202	Code of practice for climate proofing of electrical equipment.
IS:3347	Dimensions for porcelain transformer bushings
IS:3637	Gas operated relays
IS:3639	Fittings and accessories for power transformers
IS:5561	Electric Power Connectors
IS:6600/BS:CP1010	Guide for loading of oil immersed transformers
IS:10028	Code of practice for selection, installation and maintenance of transformers, Part I, II & III.

C.B.I.P. Publication Manual on transformers

If the standard is not quoted for any item, it shall be presumed that the latest version of Indian Standard shall be applicable to that item.

The equipment complying other internationally accepted standards, may also be considered if they ensure performance superior to the Indian standards.

### 3.0 GENERAL CONSTRUCTIONAL FEATURES

- 3.1 All material used shall be of best quality and of the class most suitable for working under the conditions specified and shall withstand the variations of temperature and atmospheric conditions without distortion or deterioration or the setting up of undue stresses which may impair suitability of the various parts for the work which they have to perform.
- 3.2 Similar parts, particularly removable ones, shall be interchangeable.
- 3.3 Pipes and pipe fittings, screws, studs, nuts and bolts used for external connections shall be as per the relevant standards. Steel bolts and nuts exposed to atmosphere shall be galvanized.
- 3.4 Nuts, bolts and pins used inside the transformers and tap changer compartments shall be provided with lock washers or locknuts.
- 3.5 Exposed parts shall not have pickets where water can collect.
- 3.6 Internal design of transformer shall ensure that air is not trapped in any location.
- 3.7 Material in contact with oil shall be such as not to contribute to the formation of acid in oil. Surface in contact with oil shall not be galvanized or cadmium plated.
- 3.8 Labels, indelibly marked, shall be provided for all identifiable accessories like relays, switches, current transformers etc. All label plates shall be of in corrodible material.



- 3.9 All internal connections and fastenings shall be capable of operating under overloads and over excitation, allowed as per specified standards without injury.
- 3.10 Transformer and accessories shall be designed to facilitate proper operation, inspection, maintenance and repairs.
- 3.11 No patching, plugging, shimming or other such means of overcoming defects, discrepancies or errors will be accepted.
- 3.12 Schematic drawing of the wiring, including external cables shall be put under the pros pane sheet on the inside door of the transformer marshalling box.

### 3.13 Painting

- 3.13.1 All paints shall be applied in accordance with the paint manufacturer's recommendations. Particular attention shall be paid to the following:

- Proper storage to avoid exposure as well as extremes of temperature.
- Surface preparation prior to painting.
- Mixing and thinning.
- Application of paints and the recommended limit on time intervals between coats.
- Shelf life for storage.

- 3.13.1.1 All paints, when applied in normal full coat, shall be free from runs, sags, wrinkles, patchiness, brush marks or other defects.

- 3.13.1.2 All primers shall be well marked into the surface, particularly in areas where painting is evident, and the first priming coat shall be applied as soon as possible after cleaning. The paint shall be applied by airless spray according to the manufacturer's recommendation. However, wherever airless spray is not possible, conventional spray be used with prior approval of purchaser.

- 3.13.1.3 The supplier shall, prior to painting protect nameplates, lettering gauges, sight glasses, light fittings and similar such items.

### 3.13.2 Cleaning and Surface Preparation:

- 3.13.2.1 Surface preparation for tank, pipes, etc.-

All surfaces of transformer tank, pipes etc. shall be thoroughly blast cleaned with sand or shot or grit in accordance with ISO 8501 Part 1 to a minimum standard of Sa21/2 to make the surface free from visible oil, grease and dirt, mill scale, rust, paint coatings and foreign matter. Machined areas and threaded components etc. are to be covered during blasting to prevent damage.

The air that is used for blasting should be dry and free from oil. The flanges, angles, tank curbs and other such areas shall be preferably blast cleaned prior to fabrication and paint these with one coat of primer. After adequate blast cleaning of each large surface where blasting time is more than three hours, an overall blast cleaning is to be done on the entire surface once more so that entire surface areas ie exposed as fresh for first coat of primer paint. The first coat of primer paint should be applied not later than 3-4 hours after preparation of surface to avoid oxidation.



3.13.2.2

**Surface preparation for radiator-**

All internal and external surfaces of radiator shall be thoroughly cleaned either by chemical cleaning or by blast with sand or shot or grit in accordance with ISO 8501 Part 1 to make the surface free from visible oil, grease and dirt, mill scale, rust, paint coatings and foreign matter. Suitable chemical should be used for chemical cleaning, if required. The air that is used for blasting should be dry and free from oil. After adequate surface cleaning, the first coat of primer paint/varnish should be applied not alter than 3-4 hours after preparation of surface to avoid oxidation.

3.13.2.3

**Painting-external & internal surfaces-**

Painting shall be carried out in closed and dust free area. The external surface shall be coated with suitable layers of paint and to form an impermeable layer so that air and water cannot reach the substrate. The paint selected shall be stable in outdoor condition such as rain, sunlight, pollution etc. Paint used for primer, under coat and top or finish coat should be from the same manufacturer and compatible to each other. In case in the rare event, paint used for primer, under coat and finish coat are not from the same manufacturer the compatibility test of the paint from different source shall be carried out. Painting shall be applied as per the recommendation of the paint manufacturer. The number of coats shall be such that the minimum dry film thickness (DFT) specified is achieved. The DFT of painted surface shall be checked with a measuring gauge to ensure specified DFT. Complete painting scheme for the transformer is tabulated below:

3.13.2.4

**Painting-Transformer tank, pipes, radiator etc.-**

Descripti on	Surface preparation	Primer coat	Intermediate undercoat	Finish coat	Total DFT	Colour shade
Tank, pipes etc. (External surfaces)	Blast cleaning Sa2½	Epoxy base Zinc primer (30-40 µm)	Epoxy HB MIO (30-40 µm)	Aliphatic Polyurethane (Min 50 µm)	Min. 155 µm	697 shade as per IS:5
Tank. (Internal surfaces)	Blast cleaning Sa2½	Hot oil resistant, non-corrosive varnish or paint or epoxy	-	-	Min. 30 µm	Glossy white for paint
Radiator (External surfaces)	Chemical/blast cleaning (Sa2½)	Epoxy base Zinc primer (30-40 µm)	Epoxy base Zinc primer (30-40 µm )	PU paint (Min. 50 µm)	Min. 110 µm	Matchin g shade of tank./diff er ent shade aestheti ca lly



						matching to tank
Radiator & pipes. (Internal surfaces)	Chemical cleaning if required	Hot oil proof, low viscosity varnish, flushing with transformer oil.	-	-	-	-

3.13.3 Surface preparation for control cabinets/Marshalling Boxes-

3.13.3.1 Surface preparation for all transformer control cabinets/Marshalling boxes shall be carried out conforming to following Indian Standard in dust free area:

- i) IS: 3618:Degreasing by solvent wiping: Phosphate Treatment of Iron & Steel for protection against corrosion.
- ii) IS:6005: Code of practice for phosphating of Iron and Steel

3.13.3.2 Chemicals: Suitable chemicals should be used and concentration of chemicals/weight of phosphate coating should be regularly as per recommendation of the chemical manufacturer and applicable IS.

3.13.4 Inspection: The surface for application of paint should be dry, free from oil, dirt, acid & loose adhering powder and reasonably smooth in finish without uncovered areas, rusty surfaces and roughness.

3.13.5 Painting: Control cabinets/Marshalling Boxes-enamel paint shall be used with total paint thickness as minimum 80 microns.

#### 4.0 DETAILED DESCRIPTION

##### 4.1 Tank

4.1.1 The transformer tank and cover shall be fabricated from high grade low carbon plate steel of tested quality. The tank and the cover shall be of welded construction.

4.1.2 Tank shall be designed to permit lifting by crane or jacks of the complete transformer assembly filled with oil. Suitable lugs and bosses shall be provided for this purpose.

4.1.3 All beams, flanges, lifting lugs, braces and permanent parts attached to the tank, shall be welded and where practicable, they shall be double welded.

4.1.4 The main tank body of the transformer excluding tap changing compartments and radiators shall be capable of withstanding pressure of 760mm of Hg.

4.1.5 Inspection hole(s) with welded flange(s) and bolted cover(s) shall be provided on the tank cover. The inspection hole(s) shall be of sufficient size to afford easy access to the lower ends of the bushings, terminals etc.

4.1.6 All bolted connections to the tank shall be fitted with suitable oil-tight single piece of Nitrile Rubber gaskets or equivalent which shall give satisfactory service under the operating conditions for complete lift of the transformer. Special attention shall be given to the methods of making the hot oil-tight joints between the tank and the cover as also between the tank cover and the bushings and all outlets to ensure that the joint can be remade satisfactorily and with ease, with the help of semi-skilled labour. Where compressible gaskets are used, steps shall be provided to prevent over compression.

4.1.7 Suitable guides shall be provided for positioning the various parts during assembly or dismantling. Adequate space shall be provided between the cores and windings and the bottom of the tank for collection of any sediment.



#### 4.2 TANK COVER

The transformer top shall be provided with a detachable tank cover with bolted flanged gasket joint. Lifting lugs shall be provided for removing the cover. The surface of the cover shall be suitably sloped so that it does not retain rain water.

#### 4.3 UNDER CARRIAGE

4.3.1 The transformer tank shall be supported on steel structure with detachable plain rollers completely filled with oil. Suitable channels for movement of roller with transformer shall be spaced accordingly. Rollers Wheels shall be provided with suitable roller bearings, which will resist rust and corrosion and shall be equipped with fittings for lubrication. It shall be possible to swivel the wheels in two directions, at right angle to or parallel to the main axis of the transformers.

4.3.2 Jacking pads shall be provided on the transformer. It shall be possible to change the direction of the wheels through 90 degree when the transformer is lifted on jacks to permit movement of the transformer both in longitudinal and transverse directions.

#### 4.4 CORE

4.4.1 The core shall be wound or cut or stack type.

4.4.2 Stage level inspection for core construction shall be carried out by the owner.

4.4.3 Each lamination shall be insulated such that it will not deteriorate due to mechanical pressure and the action of hot transformer oil.

- The core shall be constructed either from high grade, non-aging Cold Rolled Grain Oriented (CRGO) silicon steel laminations conforming to grade HI-B Grade or better or of amorphous metal. The amorphous core shall be of high quality amorphous ribbons having very low loss formed into wound cores rectangular shape and clamped together by frames firmly to prevent vibration or noise. The maximum flux density in any part of the cores and yoke at normal voltage and frequency shall be such that the flux density with + 12.5% voltage variation from rated voltage and frequency variation of -5% shall not exceed 1.5 tesla. The bidder shall provide saturation curve of the core material proposed to be used.

4.4.4 The bidder should offer the core for inspection and approval by the purchaser during the manufacturing stage. Bidder's call notice for the purpose should be accompanied with the following documents as applicable as a proof towards use of prime core material:

- a) Invoice of the supplier
- b) Mills test certificate
- c) Packing list
- d) Bill of lading
- e) Bill of entry certificate to customs

Core material shall be directly procured either from the manufacturer or through their accredited marketing organization of repute and not through any agent.

4.4.6 The laminations shall be free of all burrs and sharp projections. Each sheet shall have an insulating coating resistant to the action of hot oil.

4.4.7 The insulation structure for the core to bolts and core to clamp plates shall be such as to withstand 2000V DC voltage for one minute.





- 4.4.8 The completed core and coil shall be so assembled that the axis and the plane of the outer surface of the core assembly shall not deviate from the vertical plane by more than 25 mm.
- 4.4.9 All steel sections used for supporting the core shall be thoroughly shot or sand blasted, after cutting, drilling and welding.
- 4.4.10 The finally assembled core with all the clamping structures shall be free from deformation and shall not vibrate during operation.
- 4.4.11 The core clamping structure shall be designed to minimize eddy current loss.
- 4.4.12 The frame work and clamping arrangements shall be securely earthed.
- 4.4.13 The core shall be carefully assembled and rigidly clamped to ensure adequate mechanical strength.
- 4.4.14 Oil ducts shall be provided, where necessary, to ensure adequate cooling inside the core. The welding structure and major insulation shall not obstruct the free flow of oil through such ducts.
- 4.4.15 The design of magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earthed clamping structure and production of flux component at right angle to the plane of the lamination, which may cause local heating. The supporting framework of the cores shall be so designed as to avoid the presence of pockets, which would prevent complete emptying of the tank through the drain valve or cause trapping of air during filling.
- 4.4.16 The construction is to be of 'core' type. The core shall be provided with lugs suitable for lifting the complete core and coil assembly. The core and coil assembly shall be so fixed in the tank that shifting will not occur during transport or short circuits.

#### **4.5 INTERNAL EARTHING**

- 4.5.1 All internal metal parts of the transformer, with the exception of individual laminations, core bolts and their individual clamping plates shall be earthed.
- 4.5.2 The top clamping structure shall be connected to the tank by a copper strap. The bottom clamping structure shall be earthed by one or more of the following methods:
- By connection through vertical tie-rods to the top structure.
  - By direct metal to metal contact with the tank base.
  - By a connection to the top structure on the same side of the core as the main earth connection to the tank.
  - The magnetic circuit shall be connected to the clamping structure at one point only and this shall be brought out of the top cover of the transformer tank through a suitably rated insulator. A disconnecting link shall be provided on transformer tank to facilitate disconnections from ground for IR measurement purpose.
- 4.5.3 Coil clamping rings of metal at earth potential shall be connected to the adjacent core clamping structure on the same side as the main earth connections.

#### **WINDING**

- 4.5.4 Winding shall be subjected to a shrinking and seasoning process, so that no further shrinkage occurs during service. Adjustable devices shall be provided for taking up possible shrinkage in service.
- 4.5.5 All low voltage windings for use in the circular coil concentric winding shall be wound on a performed insulating cylinder for mechanical protection of the winding in handling and placing around the core.



- 4.5.6 Winding shall not contain sharp bends which might damage the insulation or produce high dielectric stresses. No strip conductor wound on edge shall have width exceeding six times the thickness.
- 4.5.7 Materials used in the insulation and assembly of the windings shall be insoluble, non catalytic and chemically inactive in the hot transformer oil and shall not soften or the otherwise affected under the operating conditions.
- 4.5.8 Varnish application on coil windings may be given only for mechanical protection and not for improvement in dielectric properties. In no case varnish or other adhesive be used which will seal the coil and prevent evacuation of air and moisture and impregnation by oil.
- 4.5.9 Winding and connections shall be braced to withstand shocks during transport or short circuit.
- 4.5.10 Permanent current carrying joints in the windings and leads shall be welded or brazed. Clamping bolts for current carrying parts inside oil shall be made of oil resistant material which shall not be affected by acidity in the oil steel bolts, if used, shall be suitably treated.
- 4.5.11 Terminals of all windings shall be brought out of the tank through bushings for external connections.
- 4.5.11.1 The completed core and coil assembly shall be dried in vacuum at not more than 0.5mm of mercury absolute pressure and shall be immediately impregnated with oil after the drying process to ensure the elimination of air and moisture within the insulation. Vacuum may be applied in either vacuum over or in the transformer tank.
- 4.5.11.2 The winding shall be so designed that all coil assemblies of identical voltage ratings shall be interchangeable and field repairs to the winding can be made readily without special equipment. The coils shall have high dielectric strength.
- 4.5.11.3 Coils shall be made of continuous smooth high grade electrolytic copper conductor, shaped and braced to provide for expansion and contraction due to temperature changes.
- 4.5.11.4 Adequate barriers shall be provided between coils and core and between high and low voltage coil. End turns shall have additional protection against abnormal line disturbances.
- 4.5.11.5 The insulation of winding shall be designed to withstand voltage stress arising from surge in transmission lines due to atmospheric or transient conditions caused by switching etc.
- 4.5.11.6 Tapings shall not be brought out from inside the coil or from intermediate turns and shall be so arranged as to preserve as far as possible magnetic balance of the transformer at all voltage ratios.
- 4.5.11.7 Magnitude of impulse surges transferred from HV to LV windings by electro magnetic induction and capacitance coupling shall be limited to B.I.L. of LV winding.



#### 4.6 INSULATING OIL

- 4.6.1 The insulating oil for the transformer shall be of EHV grade, generally conforming to IS:335. No inhibitors shall be used in the oil.
- 4.6.2 The quantity of oil required for the first filling of the transformer and its full specification shall be stated in the bid. The bidder shall quote the price of transformer complete with first filling of oil plus 10% extra. The transformer oil shall be supplied in non-returnable drums.
- 4.6.3 The design and materials used in the construction of the transformer shall be such as to reduce the risk of the development of acidity in the oil.
- 4.6.4 The contractor shall warrant that oil furnished is in accordance with the following specification:

Sr. No.	Characteristic	Requirement	Method of Test
1.	Appearance	The oil shall be clear & transparent & free from suspended matter or sediment	A representative sample of oil shall be examined in a 100 mm thick layer at ambient temp.
2.	Density at 20°C	0.89 g/cm <sup>3</sup> Max.	IS:1448
3.	Kinematic viscosity at 27°C Max.	27 CST	IS:1448
4.	Interfacial tension at 27°C Min.	0.03 N/m	IS:6104
5.	Flash point	136°C	IS:1448
6.	Pour point Max.	- 6°C	IS:1448
7.	Neutralization value (Total acidity) Max.	0.03 mg KOH/gm	IS:335
8.	Electric strength breakdown (Voltage) Min.	Less than 72.5 kV	IS:6792
9.	Dielectric dissipation factor tan delta at 90°C	0.03 Max.	IS:6262
10.	Min. specific resistance (resistivity) at 90°C	$35 \times 10^1$ <sub>2</sub> ohm cm (min.)	IS:6103



11.	Oxidation stability		
12.	Neutralization value after oxidation	0.04 mg KOH/g	
13.	Total sludge after oxidation	0.10% by weight max.	
14.	Presence of oxidation inhibitor	The oil shall not contain anti-oxidant Additives.	IS:335
15.	Water content Max.	Less than 25 ppm	IS:2362

#### 4.7 VALVES

- i) Valves shall be of forged carbon steel up to 50 mm size and of gun metal or of cast iron bodies with gun metal fittings for sizes above 50 mm. They shall be of full way type with screwed ends and shall be opened by turning counter clockwise when facing the hand wheel. There shall be no oil leakage when the valves are in closed position.
- ii) Each valve shall be provided with an indicator to show the open and closed positions and shall be provided with facility for padlocking in either open or closed position. All screwed valves shall be furnished with pipe plugs for protection. Padlocks with duplicate keys shall be supplied along with the valves.
- iii) All valves except screwed valves shall be provided with flanges having machined faced drilled to suit the applicable requirements. Oil tight blanking plates shall be provided for each connection for use when any radiator is detached and for all valves opening to atmosphere. If any special radiator valve tools are required, the contractor shall supply the same.
- iv) Each transformer shall be provided with following valves on the tank:
  - a) Drain valve so located to completely drain the tank.
  - b) Two filter valves on diagonally opposite corners of 50 mm size.
  - c) Oil sampling not less than 8mm at top and bottom of main tank.
  - d) One 15 mm air release plug.
  - e) Valves between radiators & tank

#### 4.8 ACCESSORIES

##### 4.8.1 Bushing

4.8.2 All porcelain used in bushings shall be homogeneous, non-porous, uniformly glazed to brown colour and free from blisters, burns and other defects.

4.8.3 Stress due to expansion and contraction in any part of the bushing shall not



- lead to deterioration.
- 4.8.4 Bushing shall be designed and tested to comply with the applicable standards.
- 4.8.5 Oil in oil-filled bushings shall meet the requirements of the transformer oil standards.
- 4.8.6 Bushing rated for 400A and above shall have non-ferrous flanges and hardware.
- 4.8.7 Fittings made of steel or malleable iron shall be galvanized.
- 4.8.8 Bushing shall be so located on the transformers that full flashover strength will be utilized. Minimum clearances as required for the BIL shall be realized between live parts and live parts to earthed structures.
- 4.8.9 All applicable routine and type tests certificates of the bushings shall be furnished for approval.
- 4.8.10 Bushing shall be supplied with bi-metallic/terminal connector/clamp/washers suitable for fixing to bushing terminal and the PURCHASER'S specified conductors. The connector/clamp shall be rated to carry the bushing rated current without exceeding a temperature rise of 55°C. The connector/clamp shall be designed to be corona free at the maximum rated line to ground voltage.
- 4.8.11 Bushing of identical voltage rating shall be interchangeable.
- 4.8.12 The insulation class of high voltage neutral bushing shall be properly coordinated with the insulation class of the neutral of the low voltage winding.
- 4.8.13 Each bushing shall be so coordinated with the transformer insulation that all flashover will occur outside the tank.

#### 4.8.2 Protection & Measuring Devices

##### i) Oil Conservator Tank

- a) The conservator tank shall have adequate capacity between highest and lowest visible levels to meet the requirement of expansion of the total cold oil volume in the transformer and cooling equipment.
- b) The conservator tank shall be bolted into position so that it can be removed for cleaning purposes.
- (c) The conservator shall be fitted with magnetic oil level gauge with low level electrically insulated alarm contact.
- (d) Plain conservator fitted with silica gel breather.

##### ii) Pressure Relief Device

The pressure relief device provided shall be of sufficient size for rapid release of any pressure that may be generated in the tank and which may result in damage of the equipment. The device shall operate at a static pressure of less than the hydraulic test pressure of transformer tank. It shall be mounted direct on the tank. A pair of electrically insulated contacts shall be provided for alarm and tripping.

##### iii) Buchholz relay





A double float type Buchholz relay shall be provided. Any gas evolved in the transformer shall collect in this relay. The relay shall be provided with a test cock suitable for a flexible pipe connection for checking its operation. A copper tube shall be connected from the gas collector to a valve located about 1200 mm above ground level to facilitate sampling with the transformer in service. The device shall be provided with two electrically independent potential free contacts, one for alarm on gas accumulation and the other for tripping on sudden rise of pressure.

**iv) Temperature Indicator-**

Temperature indicator.= Oil temp. Indicator (OTI) & Winding Temp. Indicator (WTI) of Model integrated RTD scheme for ROTI/RWTI with remote indicator shall be provided. Remote Oil temp. Indicator (ROTI) & Remote Winding Temp. Indicator (RWTI) should be provided in RTCC panel for installation in control Room.

**4.8.3 Oil Preservation equipment 4.8.3.1  
Oil Sealing**

The oil preservation shall be diaphragm type oil sealing in conservator to prevent oxidation and contamination of oil due to contact with atmospheric moisture. The conservator shall be fitted with a dehydrating filter breather. It shall be so designed that,

- i) Passage of air is through a dust filter and silica gel.
- ii) Silica gel is isolated from atmosphere by an oil seal.
- iii) Moisture absorption indicated by a change in colour of the crystals of the silica gel can be easily observed from a distance.
- iv) Breather is mounted not more than 1400 mm above rail top level.

**4.9 MARSHALLING BOX**

- i) Sheet steel, weather, vermin and dust proof marshalling box fitted with required glands, locks, glass door, terminal board, heater with switch, illumination lamp with switch, water tight hinged and padlocked door a suitable construction shall be provided with each transformer to accommodate temperature indicators, terminal blocks etc. The box shall have slopping roof and the interior and exterior painting shall be in accordance with the specification. Padlock alongwith duplicate keys shall be supplied for marshalling box. The degree of protection shall be IP55.
- ii) The schematic diagram of the circuitry inside the marshalling box be prepared and fixed inside the door under a pro pone sheet.
- iii) The marshalling box shall accommodate the following equipment:
  - (a) Temperature indicators
  - (b) Space for accommodating Control & Protection equipment in future for the cooling fan (for ONAF type cooling, may be provided in future).
  - (c) Terminal blocks and gland plates for incoming and outgoing cables.

All the above equipment except (c) shall be mounted on panels and back of panel wiring shall be used for inter-connection. The temperature indicators shall be so mounted that they are not more than 1600 mm from the ground level and the door(s) of the compartment(s) shall be provided with glazed window of adequate size. The transformer



shall be erected on a plinth which shall be 2.5 feet above ground level.

- iv) To prevent internal condensation, a metal clad heater with thermostat shall be provided. The heater shall be controlled by a MCB of suitable rating mounted in the box.
- v) All incoming cables shall enter the kiosk from the bottom and the gland plate shall not be less than 450 mm from the base of the box. The gland plate and associated compartment shall be sealed in suitable manner to prevent the ingress of moisture from the cable trench.
- vi) The control connection, wiring etc. shall be as per clause 3.15 of this specification.

#### 4.10 ON LOAD TAP CHAGER

The transformers shall be provided with an On-Load Tap Changer (OLTC) of well reputed and of proven make as per technical requirement for varying the effective transformation ratio while the transformer is ON load and without providing phase displacement. The salient features of the OLTC shall be as under:

The tap changing mechanism should be suitable for automatic, remote control operation from remote control panel in the control room in addition to being capable of local manual as well as local electrical operation.

The **On Load Tap Changer (OLTC)** shall include the following:

- a) An oil immersed tap selector and arcing switch on arc suppressing tap selector provided with ohmic or resistor type high speed diverter switch, for reduction of make and break arcing voltages, overloads and short circuits.
- b) Diverter switch should be with snap action mechanism with energy accumulator mounted directly on the diverter switch.
- c) Separate oil compartment
- d) Easy removable diverter switch unit.
  - i) Motor driven mechanism
  - ii) Control and protection devices
  - iii) Local tap changer position indicator
  - iv) Manual operation device
  - v) Make of OLTC – Indigenous make (type test certificates from (CPRI).
  - vi) Control voltage – Any of the auxiliary power supply voltage.

The on-load tap changer shall be designed so that the contacts do not interrupt are within the main tank of transformer. The tap changer selector and arcing switch on arc suppressing tap selector switch shall be located in one or more oil filled compartments. The diverter switch should be provided with gas vent and Buchholz relay. It shall be designed as to prevent the oil in tap selector and diverter switch compartments from mixing with the oil in transformer. The barrier board between OLTC and the transformer tank shall be made of Silicon Bonded Resin Paper (SBRP)

The tap changer shall be capable of permitting parallel operation with other transformers of the same type. The transformer shall give full load output on all taps without exceeding the limit of permissible temperature rise in oil and winding. The manual operation device shall be so located on the transformer that it can be operated by a man standing at the level of transformer track. It shall be of robust construction and shall be



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capable of frequent operations. It shall not be possible to operate the electric drive when the manual operating gear is in use.

Necessary interlocks blocking independent control when the units are in parallel shall be provided.

The controls shall be so arranged as to ensure that when a tap change operation has commenced, it shall be completed independently of the operation of control relays or switches. Local or remote control switch shall cause one tap movement only, until the control switch has returned to the off position between successive operations. Under abnormal conditions such as may occur when the contractor controlling one tap change sticks, the arrangement must be such as to switch off supply to the motor so that an out of step condition is limited to one tap difference between the units./ Limit switches shall be provided to prevent over running of mechanism.

The transformer and the tap changing equipment shall be designed to permit full rated operation with tap changing equipment temporarily installed in any intermediate position. Details of out of step protection provided for the taps should be furnished in the tender.

The control scheme for the tap changer shall be provided for independent auto/non-auto control of the tap changer when the transformers are in independent service. Voltage relating relay should be designed for maximum operational simplicity for regulating the secondary voltage of power transformer with OLTC. The required **ead** band settings are set by setting the nominal value and lower and upper levels independently.

In addition, provisions shall be made to enable non-auto/automatic parallel control also so that the tap changers of two or more transformers will be operated simultaneously when one unit is in parallel with another so that under normal conditions the tap changer will not become out of step and this will eliminate circulating current. Additional features like "Master / Follower" and visual indication, during the operation of motor shall also be incorporated.

A mechanical tap position indicator shall be provided on the tap changer in addition to remote indication equipment in the control room on remote control cubicle of OLTC. Necessary interlocks, for independent control when the units are in parallel shall be provided.

The whole of motor drive unit comprising the motor and its control gear including contractors, indicator, local electrical push buttons, five digit operation counter, handle for manual control etc. as well as terminals for the control and indication wiring shall be housed in a dust proof kiosk mounted on tap changer, A heating element with thermostat and MCB shall also be provided in kiosk for ensuring trouble free operation of the drive in cold weather. Arrangement shall be made for padlocking the kiosk. Tap position indication shall be visible by a number appearing in a small glass window on the front of the kiosk. For remote indication, an indication type instrument or digital type shall be provided on a panel on the 415 volts, 3 phase, 50 c/s external supply.

Any enclosed compartment not oil filled shall be adequately ventilated. All contractors, relay coils or other parts shall be suitably protected against corrosion or deterioration due to condensation, fungi etc.

The oil in the compartments of the main tap changing apparatus which do not contain contacts used for making or breaking current shall be maintained under



conservator head by means of a pipe connection from the highest point of the chamber to the conservator. This connection shall be controlled by a suitable valve and shall be arranged so that any gas leaving the chamber will pass into the gas and oil actuated relay. A separate oil Buchholz relay with trip contacts shall be provided for the On-Load Tap Changer chamber. Each tap changer shall also be provided with a pressure relief valve outside OLTC to protect against sudden pressure development on OLTC.

Each compartment in which the oil is not maintained under conservator head shall be provided with a suitable direct reading oil level gauge.

A permanently legible lubrication chart shall be fitted with the driving mechanism chamber.

Local electrical control switches and the local operating gear shall be clearly labeled in suitable manner to indicate the direction of operation of tap changer.

The remote control panel of OLTC gear to be installed in the control room should match in colour and dimensions sheet steel size etc. with the purchaser's transformer control panel for which details would be furnished to the successful contractor.

In addition to the fittings, auxiliaries and accessories considered necessary by the contractor the following shall be provided.

**A. FOR LOCAL ELECTRICAL CONTROL**

- i) Raise lower selector switch with a intermediate 'OFF' position.
- ii) Auxiliary transformer (if necessary) alongwith MCB s and links.
- iii) Step by step contractor
- iv) Thermal over load relay for the motor
- v) Reversing contractor
- vi) ON/OFF automatic trip air circuit breaker for motor supply
- vii) Local/Remote change over selector switch.

**B. FOR REMOTE ELECTRICAL INDEPENDENT / AUTO-CONTROL**

- i) All equipment listed in (A) above.
- ii) Tap position indicator for mounting on control panel in the control room.
- iii) Signal lamp and buzzer, for indicating "Tap Change in Progress".
- iv) Raise lower switch push button type with intermediate off/position for remote control.
- v) Emergency stop button (push button type) with visual indication.
- vi) Visual and alarm indication for non completion of operation within pre-set time
- vii) Provision of interlocking system for blocking independent control when the units are to run in parallel by providing interlock able phase sequence selector switch.
- viii) All auto-visual indications should be brought to the Remote Tap Changer Cubicle (RTCC) panel.
- ix) DC supply isolators, DC supply 'ON' indicator & DC failure, both alongwith cancellations.
- x) All equipment and their connections in RTCC panel should be properly marked. The buzzer/bell (industrial type) should be provided.



**C. FOR SIMULTANEOUS PARALLEL OPERATION OF TRANSFORMER**

- i) All equipment listed in (B) above.
- ii) Out of step relay alongwith auxiliary relays, contractors and other equipment including a buzzer and signal lamp to indicate the out of step indication when transformers in one of pair of group of rating in parallel are one tap out of step and also to trip the circuit breaker.
- iii) Control selector switch to enable to run a transformer as Master/Follower or independent in a group.
- iv) Selection switches for individual/parallel operation.
- v) DC supply, Isolators, DC supply, 'ON' indication & DC failure, hooter alongwith cancellation.

**4.11 FITTINGS**

The following fittings shall be provided on the transformers:

- i) Conservator with isolating valves, oil filling hole with cap and drain valve. The conservator vessel shall be filled with constant oil pressure diaphragm oil sealing system.
- ii) Magnetic type oil level gauge (150 mm dia) with low oil level alarm contacts.
- iii) Prismatic/toughened glass oil level gauge.
- iv) Silica gel breather with oil seal and connecting pipe complete with first fill of activated silica gel or alumina mounted at a level of 1300 mm above ground level.
- v) A double float type Buchholz relay with isolating valve, bleeding pipe and a testing cock, the test cock shall be suitable for a flexible (pipe connection for checking its operation). A 5 mm dia Copper pipe shall be connected from the relay test cock to a valve located at a suitable height above ground level to facilitate sampling of gas with the transformer in service. Interconnection between gas collection box and relay shall also be; provided. The device shall be provided with two electrically independent ungrounded contacts, one for alarm on gas accumulation and the other for tripping on sudden oil surge. These contacts shall be wired upto transformer marshalling box. The relay shall be provided with shut off valve on the conservator side as well as on the tank side.
- vi) Pressure relief devices (including pressure relief valve) and necessary air equalizer connection between this and the conservator with necessary alarm and trip contacts.
- vii) Air release plugs in the top cover.
- viii) Inspection cover, access holes with bolted covers for access to inner ends of bushing etc.
- ix) Winding temperature (hot spot) indicating device for local mounting complete in all respects. Winding temperature indicator shall have three sets of contacts to operate at different settings:
  - a) To provide winding temperature 'high alarm'
  - b) To provide temperature too high 'trip'
- x) Thermometer with pocket for oil temperature indicator with one set of alarm and one set of trip contacts and maximum reading pointer.
- xi) Lifting eyes or lugs for the top cover, core and coils and for the complete transformer.





- xii) Jacking pads
- xiii) Haulage lugs
- xiv) Protected type mercury/alcohol in glass thermometer and a pocket to house the same.
- xv) Top and bottom filter valves on diagonally opposite ends with pad locking arrangement on both valves.
- xvi) Top and bottom sampling valves.
- xvii) Drain valve with pad locking arrangement.
- xviii) Rating and connection diagram plate.
- xix) Two numbers tank earthing terminals with associated nuts and bolts for connections to purchaser's grounding strip.
- xx) Bi-directional flagged rollers with locking and bolting device.
- xxi) Marshalling Box (MB)
- xxii) Shut off valve on both sides of flexible pipe connections between radiator bank and transformer tank.
- xxiii) Cooling accessories:
  - a) Requisite number of radiators provided with:
    - One shut off valve on top
    - One shut off valve at bottom
    - Air release device on top
    - Drain and sampling device at bottom
    - Lifting lugs
  - b) Air release device and oil drain plug on oil pipe connectors.
- xxiv) Terminal marking plates for Current Transformer and Main transformer. a)  
ON-Load Tap Changer
- xxv) Oil Preservation equipment
- xxvi) LA alongwith the fittings
- xxvii) Oil Temperature indicator

Note:- (i) The fittings listed above are indicative and any other fittings which are generally required for satisfactory operation of the transformer are deemed to be included in the quoted price of the transformer.  
(ii) The contacts of various devices required for alarm and trip shall be potential free and shall be adequately rated for continuous, making and breaking current duties as specified.

#### 4.12 CONTROL CONNECTIONS AND INSTRUMENT AND WIRING TERMINAL, BOARD AND FUSES

- i) Normally no fuses shall be used anywhere instead of fuses MCBs (both in AC&DC circuits) shall be used. Only in cases where a .MCB cannot replace a fuse due to system requirements, a HRC fuse can be accepted.
- ii) All wiring connections, terminal boards, fuses MCBs and links shall be suitable for tropical atmosphere. Any wiring liable to be in contact with oil shall have oil resisting insulation and the bare ends of stranded wire shall be sweated together to prevent seepage of oil along the wire'
- iii) Panel connections shall be neatly and squarely fixed to the panel. All instruments and panel wiring shall be run in PVC or non-rusting metal cleats of the compression type. All



wiring to a panel shall be taken from suitable terminal board.

- iv) Where conduits are used, the runs shall be laid with suitable falls, and the lowest parts of the run shall be external to the boxes. All conduit runs shall be adequately drained and ventilated. Conduits shall not be run at or below ground level.
- v) When 400 Volt connections are taken through junction boxes or marshalling boxes, they shall be adequately screened and 400 volts Danger Notice must be affixed to the outside of the junction boxes or marshalling box. Proper colour code for Red, Yellow, Blue wires shall be followed.
- vi) All box wiring shall be in accordance with relevant IS. All wiring shall be of stranded copper (48 strands) of 1100 Volt grade and size not less than 2.5 Sq.mm.
- vii) All wires on panels and all multi-core cables shall have ferrules, for eacy identifications, which bear the same number at both ends, as indicated in the relevant drawing.
- viii)
- ix) At those points of interconnection between the wiring carried out by separate contractors, where a change of number can not be avoided double ferrules shall be provided on each wire. The change of numbering shall be shown on the appropriate diagram of the equipment.
- x) Stranded wires shall be terminated with tinned Ross Courtney terminals, claw washers or crimped tubular lugs. Separate washers shall be suited to the size of the wire terminated. Wiring shall, in general, be accommodated on the sides of the box and the wires for each circuit shall be separately grouped. Back of panel wiring shall be arranged so that access to the connecting items of relays and other apparatus is not impeded.
- xi) All circuits in which the voltage exceeds 125 volts, shall be kept physically separated from the remaining wiring. The function of each circuit shall be marked on the associated terminal boards.
- xii) Where apparatus is mounted on panels, all metal cases shall be separately earthed by means of stranded (48 no) copper wire of strip having a cross section of not less than 2 sq.mm where strip is used, the joints shall be sweated. The copper wire shall have green coloured insulation for earth connections.
- xiii) All wiring diagram for control and relay panel shall preferably be drawn as viewed from the back and shall show the terminal boards arranged as in services.
- xiv) Terminal block rows should be spaced adequately not less than 100 mm apart to permit convenient access to external cables and terminations.
- xv) Terminal blocks shall be placed with respect to the cable gland (at a minimum distance of 200 mm) as to permit satisfactory arrangement of multicore cable tails.
- xvi) Terminal blocks shall have pairs of terminals for incoming and outgoing wires. Insulating barriers shall be provided between adjacent connections. The height of the barriers and the spacing between terminals shall be such as to give adequate protection while allowing easy access to terminals. The terminals shall be adequately protected with insulating dust proof covers. No live metal shall be exposed at the back of the terminal board. CT terminals shall have shorting facilities.  
The terminals for CTs should have provision to insert banana plugs and with isolating links.



- xvi) All interconnecting wiring, as per the final approved scheme between accessories of transformer and marshalling box is included in the scope of this specification and shall be done by the T/F supplier.
- xvii) The schematic diagram shall be drawn and fixed under a transparent propane sheet on the inner side of the marshalling box cover.
- xviii) To avoid condensation in the Marshalling Box, a space heater shall be provided with an MCB and thermostat.
- xix) Suitable 11W, CFL light shall be provided in the Marshalling Box at lightning purpose.

#### 4.14 INSPECTION AND TESTING

- i) The contractor shall carry out a comprehensive inspection and testing programme during manufacture of the transformer. An indicative of inspection is given under clause no. 4.1. This is, however, not intended to form a comprehensive programme as it is contractor's responsibility to draw up and carry out such a programme duly approved by the purchaser.
- ii) The contractor shall carry out type tests and routine tests on the transformers.
- iii) Only one no. of transformer of each rating will be subjected to type test. The charges for conducting each of type tests shall be included in the bid price and no separate type test charges shall be paid.
- iv) The pre-shipment checks shall also be carried out by the contractor.
- v) The requirements on site tests are as listed in the specifications.
- vi) Certified test report and oscillograms shall be furnished to the Purchaser/Consultants for evaluation as per the schedule of distribution of documents. The contractor shall also evaluate the test results and rectify the defects in the equipment based on his and the purchaser's evaluations of the tests without any extra charges to the Purchaser Manufacturer's Test Certificates in respect of all associated auxiliary and ancillary equipment shall be furnished.
- vii) The bidder shall state in his proposal the testing facilities available at his works. In case full testing facilities are not available, the bidder shall state the method proposed to be adopted so as to ascertain the transformer characteristics corresponding to full capacity.
- viii) Deleted.
- ix) The 'Temperature Rise Test' on one Power T/F randomly selected from each lot at firm's works shall be conducted before acceptance of T/Fs.

#### 5.1 INSPECTION

- i) Tank and Conservator
  - a) Inspection of major weld.
  - b) Crack detection of major strength weld seams by dye penetration test.
  - c) Check correct dimensions between whets, demonstrate turning of wheels, through 90° and further dimensional check.
  - d) Leakage test of the conservator.
  - e) Oil sample taken from Power Transformers may be got inspected from NABL accredited Lab for its conformance as per IS: 1866 instead of IS: 335. In addition to the above the firm shall also submit a proof of purchase of oil as per IS: 335
- ii) Core



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- a) Sample testing of core materials for checking specific loss properties, magnetization characteristics and thickness.
  - b) Check on the quality of varnish if used on the stampings.
  - c) Check on the amount of burrs.
  - d) Visual and dimensional check during assembly stage.
  - e) Check on completed cover for measurement of iron loss.
  - f) Visual and dimensional checks for straightness and roundness of core, thickness of limbs and suitability of clamps.
  - g) High voltage DC test (2 KV for one minute) between core and clamps.
- iii) Insulating Material**
- a) Sample check for physical properties of materials.
  - b) Check for dielectric strength
  - c) Check for the reaction of hot oil on insulating materials.
- iv) Winding**
- a) Sample check on winding conductor for mechanical and electrical conductivity.
  - b) Visual and dimensional checks on conductor for scratches, dent mark etc.
  - c) Sample check on insulating paper for PH value, electric strength.
  - d) Check for the bonding of the insulating paper with conductor.
  - e) Check for the reaction of hot oil and insulating paper.
  - f) Check and ensure that physical condition of all materials taken for windings is satisfactory and free of dust.
  - g) Check for absence of short circuit between parallel strands.
- v) Checks Before Drying Process**
- a) Check condition of insulation on the conductor and between the windings.
  - b) Check insulation distance between high voltage connections, between high voltage connection cables and earth and other live parts.
  - c) Check insulating distances between low voltage connections and earth and other parts.
- vi) Checks during drying process**
- a) Measurement and recording of temperature and drying time during vacuum treatment.
  - b) Check for completeness of drying.
- vii) Assembled Transformer**
- a) Check completed transformer against approved outline drawing, provision for all fittings, finish level etc.
  - b) Jacking test on the assembled transformer.
- viii) Oil**
- Oil sample taken from Power transformer may be got inspected from NABL Accredited lab. For its conformance as per IS: 1866. In addition to the above the firm shall also submit a proof of purchase of oil as per IS:335.
- ix) Test reports for bought out items**
- The contractor shall submit the test reports for all bought out/sub contracted items for



approval.

- a) Buchholz relay
- b) Sudden pressure rise relay on Main Tank
- c) Bushings
- d) Bushing current transformers in neutral (if provided)
- e) Marshalling box
- f) On load tap changer
- g) Any other item required to complete the works
- h) Porcelain, bushings, bushing current transformers, wherever provided, winding coolers, control devices, insulating oil and other associated equipment shall be tested by the contractor in accordance with relevant IS. If such equipment is; purchased by the contractor on a sub-contract, he shall have them tested to comply with these requirements.

## 5.2 FACTORY TEST

- i) All standards routine tests in accordance IS:2026 with dielectric tests corresponding as per latest amendments to IS:2026 shall be carried out.
- ii) All auxiliary equipment shall be tested as per the relevant IS. Test certificates shall be submitted for bought out items.
- iii) High voltage withstand test shall be performed on auxiliary equipment and wiring after complete assembly.
- iv) Following additional routine tests shall also be carried out on each transformers:
  - a) Magnetic Circuit Test
  - b) Each core shall be tested for 1 minute at 2000 volt DC.
  - c) Oil leakage test on transformer

### 5.2.1 Type test

The transformer shall be subject to the following type tests:

- (1) Deleted
- (2) Measurement of Zero sequence impedance.
- (3) Temperature rise test
- (4) Short circuit test
- (5) Dielectric test
- (6) Measurement of voltage ratio and check of voltage vector relationship test
- (7) Lightning impulse withstand test for line and neutral terminal
- (8) Measurement of acoustic noise level
- (9) Measurement of insulation resistance & winding resistance

**5.2.2** The type test report(s) submitted by the bidder/ supplier from any NABL accredited laboratory shall be acceptable for participation of the bidder in the procurement/ empanelment process. In case NABL accredited laboratory happens to be that of manufacturer itself added precaution shall be taken to get type test and other tests witnessed in the laboratory by Nigam representative at the time of acceptance of material.

### 5.2.3 Routine Tests:

Transformer routine tests shall include tests stated in latest issue of IS:2026 (Part-I). These tests shall also include but shall not be limited to the following:-

- i) Measurement of winding DC resistance.
- ii) Voltage ratio on each tapping and check of voltage vector relationship.





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- iii) Impedance voltage at all tapings.
- iv) Magnetic circuit test –  
After routine tests, each core shall be tested for 1 minute at 2 KV DC between all bolts, side plates and structural steel work. Immediately prior to the dispatch of the transformer, the magnetic circuit shall be pressure tested for 1 minute at 2 KV A.C. between the core and the earth.
- v) Load losses
- vi) No load losses and no load current.
- vii) Absorption index i.e. insulation resistance for 15 seconds and 60 seconds (R60/R15) and polarization index i.e. Insulation Resistance for 10 minutes and one minute R10 mt/R1 mt.).
- viii) Induced over voltage withstand test.
- ix) Separate source voltage withstand test (applied potential).
- x) Measurement of power consumed by fans & oil-pumps.

Six (6) sets of certified test reports and oscillographs shall be submitted for evaluation prior to dispatch of the equipment. The contractor shall also evaluate the test results and shall correct any defect indicated by his and Purchaser's evaluation of the tests without charge to the Purchaser.

### 5.3 TANK TESTS

#### 5.3.3 a) Oil leakage test:

The tank and oil filled compartments shall be tested for oil tightness completely filled with air or oil of viscosity not greater than that of insulating oil conforming to IS:335 at the ambient temperature and applying a pressure equal to the normal pressure plus 35 KN/m<sup>2</sup> measured at the base of the tank. The pressure shall be maintained for a period of not less than 12 hours for oil and one hour for air and during that time no leak shall occur.

#### b) Vacuum test

One transformer tank of each size shall be subjected to the specified vacuum as in Cl. 15.1.2. The tanks designed for full vacuum shall be tested at an internal pressure of 3.33 KN per m<sup>2</sup> (25 mm of Hg.) for one hour. The permanent deflection of flat plates, after the vacuum has been released shall not exceed the value specified below without affecting the performance of the transformer:-

Horizontal length of flat plate in mm	Permanent Deflection in mm
Up to & including 750	5
751 to 1250	6.5
1251 to 1750	8
1751 to 2000	9.5
2001 to 2250	11
2251 To 2500	12.5
2501 To 3000	16
Above 3000	19

The permanent deflection of flat plates after the vacuum has been released shall



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not exceed the value specified in C.B.I.P. Manual on Transformers (Revised 1999) without affecting the performance of the transformers

c) **PRESSURE TEST:**

One transformer tank of each size shall be subjected to a pressure corresponding to twice the normal head of oil or to the normal pressure plus 35 KN per m<sup>2</sup> (5 Lb. Per sq. inch.) which ever is lower measured at the base of the tank and will be maintained for one hour. The permanent deflection of flat plates after the excess pressure has been released shall not exceed the figure specified above.

- e) The following type and routine Tests shall be carried out on the On load tap changer and motor driver mechanism in accordance with IS: 8468-1977 or its latest version.

### 5.3.2 ON LOAD TAP CHANGER

#### I. Type Tests

Type tests shall be performed on the samples of the relevant tap changer or components after their final development. The following shall constitute the type tests.

- a) Mechanical Test
- b) Auxiliary Circuit insulation tests.
- c) Tests for temperature rise of contacts
- d) Switching tests
- e) Short circuit tests
- f) Transition impedance test.
- g) Mechanical life test
- h) Dielectric test II.

#### **ROUTINE TESTS:**

The following shall constitute the routine tests:

- a) Mechanical test
- b) Auxiliary Circuit insulation tests
- c) Dielectric Tests.

### 5.3.3 MOTOR DRIVEN MECHANISM

#### I) Type Tests.

The following shall constitute the type tests.

- a) Mechanical tests
- b) Auxiliary Circuit insulation tests.
- c) Mechanical load test
- d) Over run test



e) Protection of Motor Driver Cubicle.

II) **ROUTINE TESTS**

The following shall constitute the routine tests

- a) Mechanical Tests
- b) Auxiliary Circuit insulation tests.

**5.4 PRESHIPMENT CHECK AT MANUFACTURERS WORKS**

- i) Check for proper packing and preservation of accessories like radiators, bushings, explosions vent, dehydrating breather, rollers, buchholz relay, control cubicle connecting pipes and conservator etc.
- ii) Check for proper provision of bracing to arrest the movement of core and winding assembly inside the tank.
- iii) Gas tightness test to conform tightness.

**5.5 INSPECTION AND TESTING AT SITE:**

The contractor shall carry out detailed inspection covering areas right from the receipt of material upto commissioning stage. An indicative programme of inspection as envisaged by the engineer is given below. This is however not intended to form a comprehensive programme as it is contract's responsibility to draw up and carry out such a programme.

**5.5.3 Receipt and Storage checks**

- i) Check and record condition of each package visible parts of the transformers etc. for any damage.
- ii) Check and record the gas pressure in the transformer tank as well as in the gas cylinder.
- iii) Visual check of core and coils before filling up with oil and also check condition of core and winding in general.

**5.5.4 Installation checks**

- i) Inspection and performance testing of accessories like tap changers etc.
- ii) Check choking of the tubes of heat exchangers.
- iii) Test on oil samples taken from main tank top and bottom and cooling system. Samples should be taken only after the oil has been allowed to settle for 24 hours.
- iv) Check the whole assembly for tightness, general appearance etc.
- v) Oil leakage tests.

**5.5.5 Pre-commissioning tests**

After the transformer is installed, the following pre-commissioning tests and checks shall be done before putting the transformer in service.

- i) Dry out test
- ii) Megger test
- iii) DC Resistance measurement of windings
- iv) Ratio test on all taps
- v) Phase relationship test (Vector grouping test)
- vi) Buchholz relay alarm & surge operation test
- vii) Low oil level (in conservator) alarm
- viii) Temperature indicators
- ix) Marshalling kiosk
- x) Protective relays
- xi) Magnetizing current
- xii) Tests on OLTC

**5.5.5** In to order to have checks on manufacturing procedure and quality, bidder shall be



furnish the following calculation.

- Flux density calculations
- Heat dissipation calculations,
- Short circuit calculations for Thermal ability and
- Load loss calculations.

**5.5.6** The following additional checks shall be made:

- i) All oil valves are in correct position closed or opened as required.
- ii) All air pockets are cleared
- iii) Thermometer pockets are filled with oil
- iv) Oil is at correct level in the bushing, conservator, diverter switch & tank etc.
- v) Earthing connections are made
- vi) Colour of Silica gel is blue
- vii) Bushing arcing horn is set correctly and gap distance is recorded.
- viii) CT polarity and ratio is correct.

## **5.6 PERFORMANCE**

The performance of the transformer shall be measure on the following aspects:

- i) The transformer shall be capable of being operated without danger on any tapping at the rated KVA with voltage variation  $\pm 10\%$  corresponding to the voltage of the tapping.
- ii) The maximum flux density in any part of the cores and yokes at normal voltage and frequency shall be such that the flux density on any taps position with + 12.5% voltage variations and -5% frequency variations, shall not exceed  $1.9 \text{ wb/m}^2$ .
- iii) Ratio interference and Noise Level
- iv) The transformer shall be designed with particular attention to the suppression of third and fifth harmonics so as to minimize interference with communication circuits.

## **5.7 FAULT CONDITIONS**

- (a) The transformer shall be capable of withstanding for two (2) seconds without damages any external short circuit to earth.
- (b) Transformers shall be capable of withstanding thermal and mechanical stresses conveyed by symmetrical or asymmetrical faults on any winding.
- (c) Transformers shall accept, without injurious heating, combined voltage and frequency fluctuation which produce the 125% over fluxing condition for one minute.

## **5.8 TEST WAIVAL, PROCEDURE AND COSTS**



- i) The purchaser, at his option, may waive impulse tests provided type test reports of impulse tests carried out on essentially identical units in their factory in India are furnished by the manufacturer.
- ii) No load losses and exciting current shall be measured at rated voltage, rated frequency and at 90% and 110% of rated voltage, both before and after the lightning impulse tests.
- iii) The method of test loading shall be described in the test report for determination of both average and hottest spot temperature. Where the winding temperature equipment is specified, data shall also be included for calibration of hottest spot temperature indicator.
- iv) Resistance of each winding of each phase shall be measured at principal and at all the taps and corrected to 75°C.
- v) Impedance voltage shall be measured at principal and at all taps.
- vi) No load loss measurement at 415 Volt.
- vii) Certified test report and oscillograms shall be furnished to the Purchaser/Consultants for evaluation as per the schedule of distribution of documents. The Contractor shall also evaluate the test results and rectify the defects in the equipment based on his and the purchaser's evaluations of the tests without any extra charges to the: Purchaser. Manufacturer's test certificates in respect of all associated auxiliary and ancillary equipment shall be furnished.
- viii) The bidder shall state in his proposal the testing facilities available at his works. In case full testing facilities are not available, the bidder shall state the method proposed to be adopted so as to ascertain the transformer characteristics corresponding to full capacity testing.

## 5.9 WITNESSING OF TESTS AND EXCESSIVE LOSSES

- i) The Purchaser and/or his representative reserve the right to witness any or all tests, or to accord waiver at its sole discretion.
- ii) The purchaser reserves the right to reject the Transformer if losses exceed against the losses approved in GTPs/ drawings or if temperature rise of oil and winding exceed the values specified elsewhere.

## 6.0 REJECTION

The purchaser may reject any transformer if during tests or service any of the following conditions arise:

- iii) Impedance value exceeds the guaranteed value by  $\pm 10\%$  or more.
- iv) The difference in impedance values of any two phases during single phase short circuit impedance test exceeds 2% of the average value guaranteed by the vendor.
- v) Oil or winding temperature rise exceeds the specified value.
- vi) Transformer fails on impulse test
- vii) Transformer fails on Power Frequency Voltage withstand test
- viii) Transformer is proved to have been manufactured not in accordance with the agreed specification.

## 7.0 SPARES: - Deleted

## 8.0 INSTRUCTIONS MANUAL





- 8.1 Eight sets of the instruction manuals shall be supplied at least four (4) weeks before the actual dispatch of equipment. The manuals shall be in bound volumes and shall contain all the drawings and information required for erection, operation and maintenance of the transformer. The manuals shall include amongst other the following particulars:
- Marked erection prints identifying the components parts of the transformer as dispatched with assembly drawings.
  - Detailed dimensions assembly and description of all auxiliaries.
  - Detailed views of the core and winding assembly, winding connections & tappings, tap changer construction etc. These drawings are required for carrying out overhauling operation at site.
  - Salient technical particulars of the transformers.
  - Copies of all final approved drawing.
  - Detailed O & M instructions with periodical check lists and performance etc.

## 8.2 COMPLETENESS OF EQUIPMENT

- All fittings and accessories, which may not be specifically mentioned in the specification but which are necessary for the satisfactory operation of the plant, shall be deemed to be included in the specification and shall be furnished by the contractor without extra charges. The equipment shall be complete in all details, whether such details are mentioned in the specification or not, without any financial liability to the Purchaser under any circumstances.
- All deviations from this specification shall be separately listed under the requisite schedules, in the absence of which it will be presumed that all the provision of the specification are complied with by the bidder.

## 9.0 TOOLS & TACKLES

All the necessary tools and tackles required for normal operation & maintenance shall be supplied by the contractor.

## 10.0 COMMISSIONING

The equipment shall be commissioned as per CBIP manual, IS 10028 and manufacturer's recommendations. All the as built drawings/manuals shall be pre-requisite for commissioning of Transformer. The authorized technical representative of successful bidder shall remain at site at the time of commission of Power Transformer (including taking sample of Transformer Oil by Nigam before commission of Transformer).

## 11.0 STAGE INSPECTION:

The purchaser reserves the right for stage inspection of one or all the transformers during the course of manufacture to ensure that the internal details are in accordance with the data / information supplied / G.T.P.'s as per Contract/P.O.

## 12 ACCESSORIES AND FITTINGS:

Each transformer shall be provided with the following in accordance with details to the extent these are specified in IS 2026-1977/relevant IEC: -

- Inspection cover with lifting lugs
- Rating Plate



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- c) Diagram Plate
- d) Two earthing terminals
- e) Lifting Lugs
- f) Jacking Lugs
- g) Conservator Tank with drain plug and oil filling hole
- h) Dehydrating Breather
- i) 1. Thermometer (dial type) with one pair of contacts for top oil over temperature alarm.  
2. Thermometer (dial Type) with two pairs of contacts for winding over temperature Alarm & Trip & for On & OFF Motor Blower / Cooling fans.
- j) Thermometer Pockets
- k) One No. Magnetic oil level gauge mounted on conservator tank for main transformer tank with 3 positions marked as follow:-Min -5<sup>0</sup> C,  
30<sup>0</sup> C and  
Maximum 98<sup>0</sup> C for main tank.
- l) One No. Plain Sight Glass Oil Level Gauge for OLTC Tank with Min.& Max. Oil Level Markings.
- m) Oil filling hole with cap.
- n) Air release device.
- o) Pressure relief device
- p) i. Gas & oil actuated relay with alarm and trip contacts and shut off valves on conservator as well as main tank side for Main tank.  
q) ii -do- with one pair of trip contacts for OLTC tank also
- r) Filter valves (lower valve to be used as a drain valve)
- s) Terminal marking plate
- t) Marshalling box
- u) Necessary oil for the first filling
- v) Bottom mounting channel
- w) Flanged bi-directional rollers (four Nos.)
- x) Studs & pulling eyes in both directions.

13. Deleted

14. **SPECIAL TOOLS:**

Any special tools required for erection and for maintenance work shall be provided along with each transformer. Any special tools if required & recommended by the bidder shall be supplied however cost of such tools be mentioned clearly in price bid.

Superintending Engineer/P&D,  
Cum-Member Secretary CSC,  
UHBVN & DHBVN

**ANNEXURE "A"**



**SCHEDULE OF GUARANTEED AND OTHER TECHNICAL PARTICULARS.**

NOTE: I For the purpose of this specification the rated load shall be taken as 12.5 MVA.

II. Particulars under guaranteed shall be clearly marked.

1. Name of the Manufacturer:
2. Normal continuous rating with ONAN cooling.
3. Normal ratio of transformer.
4. Phase Connections:
  - a. HV winding.
  - b. LV Winding.
  - c. Vector Group Reference
5. Max. Temperature rise of oil over ambient air  
Temperature of 50°C.
6. Max Hot spot Temperature under normal full load conditions with Max.  
Yearly weighted ambient temperature of 32°C.
7. Max. Temperature rise of winding by resistance over a Max. Ambient air  
temperature of 50°C.
8. Temperature Gradient between oil and winding.
9. Calculated time constant of cooling system.
10. No Load loss at normal ratio, rated voltage and rated frequency without  
any tolerance.
11. Load loss at 12.5 MVA
12.
  - a) Auxiliary Losses.
  - b) No. of cooling fans
- 13 Impedance voltage at normal current and voltage at 75°C average  
winding temperature at Tap No. 3.
14. Reactance voltage drop expressed as percent of rated voltage.
15. Efficiency at normal ratio, rated voltage, rated frequency and  
75°C average winding temperature at:
  - a. Rated Load
  - b. ¾ Rated Load
  - c. ½ Rated Load
- 16 Regulation at rated load and at:
  - a. Unity Power Factor.
  - b. 0.8 Power Factor (Lagging)
- 17 Max Flux density at normal Voltage and frequency in:
  - a. CORE.
  - b. YOKE
- 18 Limit for over fluxing
- 19 Max Current Density at Continuous Maximum Rating in:
  - a. HV Winding.
  - b. LV Winding
- 20 Magnetizing current and its power factor at normal ratio and  
frequency.



- 21 CORE:
- Whether core laminations are of cold rolled grain oriented silicon steel / amorphous
  - Insulator material of core laminations
  - Detail of oil duct in core (Whether in or at right angles to the plane of core laminations).
- 22 Type of Winding
- HV Side winding
  - LV Side winding
- 23 Type of Insulation
- HV side winding
  - LV side winding
  - Between HV & LV Windings
- 24 Rated short duration power frequency withstand test voltage on:
- HV Winding
  - LV Winding
  - Neutral and of LV winding
- 25 Rated lightning impulse with stand test voltage with 1.2/50 micro-second wave on
- HV Winding
  - LV Winding
- 26 Voltage to earth for which the star point shall be insulated
- 27 Details of special arrangement made to improve stress conditions.
- 28 Details of Bushings
- HV side
  - LV side
  - Neutral Side
    - Type & standard reference.
    - One minute dry with stand power frequency voltage kV ( rms)
    - One-minute wet withstand Power frequency voltage kV ( rms)
    - Impulse with stand test voltage with 1.2/50 micro sec. Wave kV ( Peak)
    - Creepage distance in air
    - Maximum current rating of the Bushing both HV & LV
    - Recommended gap setting
    - Assembled weight of bushing(Kg)
- 29 Detail of OLTC gear
- Make & type designation
  - Rated Voltage
  - Rated Current
  - Step Voltage
  - No. of Steps
  - Whether provided with local manuals, local electrical and removed electrical control?
  - Whether provisions of parallel operation exists?
  - Detail of protective device provided on OLTC
  - Auxiliary supply details



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- j) Approx. over all dimensions
- k) Approx. over all weight
- l) Approx. quantity of oil
- 30 Type & Details of winding Temperature indicator.
- 31 Type & Details of Transformer oil Temperature Indicator
- 32 i) Type & Details of main Buchholz relay  
ii) Type & Details of OLTC Buchholz relay.
- 33 Weight of copper to be used in the complete Transformer
- 34 a) Weight of core (Kg)  
b) Weight of Winding (Kg)
- 35 Weight of Oil in Transformer (Kg)
- 36 Weight of Transformer complete with oil and accessories (Kg)
- 37 Weight of complete Transformer arranged for transport or the heaviest packet if broken down (Kg)
- 38 Dimensions of transformer
  - a) Over all length
  - b) Over all breadth
  - c) Max. height to top of conservator.
- 39 Volume of conservator tank between the highest & lowest indicated levels.
- 40 Free space required at top for removal of bushings.
- 41 List of reference of similar transformer already in service
- 42 Deviation from this technical Specification
- 43 No. of years for which the design offered has been in commercial use.
- 44 Noise level when energised at normal voltage and normal frequency at no load.
- 45 Shipping details: -
  - i) Parts detached for transport
  - ii) Weight of heaviest package (Kg)
  - iii) Weight of other heavy packages (Kg) iv)Dimensions of largest package
  - a. Length in mm.
  - b. Breadth in mm.
  - c. Height in mm.

**NOTE:** The transformer oil shall comply in all respects with the requirement of IS:335.

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**ANNEXURE 'B' TO SCHEDULE 'D' (Part-I)**





**SCHEDULE OF DELIVERIES**

Sr. No.	Name of item / Specification	Name of consignee	Delivery Schedule
1.	Three phase, 50 Hz, 12.5 MVA, 33/11 KV Step down, outdoor ONAN Power Transformers complete with all accessories /fittings and conforming to Nigam's Technical Specification No. CSC-74-R-II/DH/UH/P&D/ 2015-16(with amendment) and relevant ISS with latest amendments.	Any Where in Haryana	<b>To be decided/approved by CE/MM while issuing NIT</b>  For the 1st P.O., the 1st power transformers shall be delivered in the stores within 45 days after the date of commencement of delivery schedule i.e. from the day of approval of drawing/type tests OR within 146 <sup>th</sup> day from the date of issue of Rate Contract whichever is earlier and the balance supply shall be made within 45 days thereafter.  For subsequent POs the 1st power transformers shall be delivered in the stores within 45 days from the date of receipt of Purchase Order and the balance supply shall be made within 45 days thereafter..

**Note:-**

1. The delivery schedule as mentioned above shall be read in conjunction with the clauses of type test and drawing mentioned in schedule – D ( Part- II) , wherever applicable.
2. The material should be supplied to the consignees within 15 days of issue of dispatch authorization or within contractual delivery period whichever expires earlier. After this period, the firm will supply the material at its own risk and responsibility. The acceptances of such material with or without re-inspection upto the scheduled delivery period shall be at the sole discretion of Chief Engineer/MM, UHBVN/ DHBVN. Thereafter, Nigam will have a right to refuse or accept such delayed material on the applicable rates, terms & conditions.

Name & Full Address of Tenderer

Place:-

Date:-



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**ANNEXURE – IV**

***Format for raising Inspection Call by the Vendor / Supplier***

From,

Name of the Firm with Complete Address

To,

Concerned Department (CE/MM)  
Address

**Subject:-** Inspection Call for \_\_\_\_\_ No [Items] as per Work Order / Purchase Order No -  
\_\_\_\_\_ dt. \_\_\_\_\_

Sir,

This is with reference to subject cited Work Order / Purchase Order. We would like to inform that below mentioned material is ready for Inspection:

Sr No	Item Description	Quantity as per WO/PO	Quantity already Inspected & supplied	Quantity offered for Inspection	Balance Quantity	Contract Delivery Period

It is requested to kindly depute an officer for inspection of the materials. The name and contact details of the person responsible for getting the inspection conducted is:-

\_\_\_\_\_ [Contact Details of Person]  
\_\_\_\_\_ [Date and Place for Inspection]

Signature  
Name  
Designation  
Company Seal

**Note:-**



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**Annexure – V**

(TO BE FILLED IN AND SIGNED BY THE TENDERER)

### **SCHEDULE OF DEVIATIONS**

We/I have carefully gone through the Technical Specification and the general conditions of contract and we/I have satisfied ourselves/myself and hereby confirm that our/my offer strictly conforms to the requirements of the Technical Specifications and general conditions of contract except for the deviations which are given below:-

Sr. No.	Description	Stipulation in specification	Deviations offered	Remarks.
A.	<b>Commercial Terms:</b>			
	Clause No.			
B.	<b>Technical Specifications:</b>			
	Clause No.			

(Please use more Sheets, if required).

Dated:

Place:

Designation  
Name  
Status

Whether Authorized Signatory of the  
Tendering Company

Name of the Tendering Company



**BANK GUARANTEE PROFORMA**

This agreement is made this \_\_\_\_\_ day of \_\_\_\_\_ (a) \_\_\_\_\_ between \_\_\_\_\_ (b) a company registered under banking Companies Act/or any other Act to be specified, having its registered office at \_\_\_\_\_ (c) called the guarantor which expression shall unless repugnant to the context or meaning thereof, include its successors and assigns of the first part M/s \_\_\_\_\_ (d) a Company/firm registered under the companies Act 1956/ partnership firm/proprietorship firm having its registered office at \_\_\_\_\_ (e) (hereinafter called the suppliers which expressions shall unless repugnant to the context or meaning thereof, include its successors and assigns) of the second part at the DHBVNL, a body corporate under company Act 1956 (hereinafter called the purchaser, which expressions shall unless repugnant to the context or meaning thereof, include its successors and assigns) of the third part.

Whereas the supplier has interalia agreed with the purchaser to supply the purchaser \_\_\_\_\_ (f) on the terms and conditions contained in the contract No. \_\_\_\_\_ dated \_\_\_\_\_ -- (g) placed by the purchaser on the suppliers and accepted by the suppliers.

And whereas under clause \_\_\_\_\_ (h) of the said contract, the supplier is required to furnish a bank guarantee for a sum of Rs. \_\_\_\_\_ (i) being the \_\_\_\_\_ (j) value of all the consignments of the above material on account of retention money, which but for this guarantee value be withheld by the purchaser till such time that the material is received in good condition and in accordance with the specification of the same to guarantee the payment of the retention money on bills submitted against supply of material/repair of equipment on order from time to time upto a maximum amount of the sum Rs. \_\_\_\_\_ (k).

And whereas at the request of the supplier the purchaser has agreed not to retain \_\_\_\_\_ (l) of the contract price of all the consignments and in lieu thereof to accept Bank Guarantee from the Guarantor for the due performance of the said contract by the said supplier on the terms and conditions herein contained. Now this deed, therefore, witnesseth and it is hereby agreed by and between the parties hereto as follows:-

The Guarantor hereby guarantees to the purchaser the quality, workmanship and design of all the consignments of \_\_\_\_\_ (m) in accordance with the prescribed specifications and the terms of the said contract and agrees to indemnify and keep indemnified the said purchaser to the extent of Rs. \_\_\_\_\_ (n) in the aggregate against all losses, damages, costs, charges and expenses which maybe suffered or incurred by the purchaser on account of any defect in the material supplied or on account of any breach on the part of said supplier or any of the terms and conditions of the said contract in the supply/repair of the consignments. The guarantor further agrees the said purchaser shall be the sole judge whether the supply/repairs have been made according to the prescribed specifications, design and workmanship as laid down in the said contract and the supplier had committed breach or breaches of any of the terms and conditions of the said contract and the extent of loss/damage, cost, charges, l or expenses suffered or incurred by the purchaser on account thereof and the guarantor shall immediately on receipt of any claim or claims from the said purchaser pay to the extent of the amount specified above "without demur or objection".



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The guarantor further agrees that this guarantee shall remain in full force and effect for \_\_\_\_\_(o) months from the date of dispatch of material by the said supplier under the said contract i.e. upto \_\_\_\_\_(p)

The guarantor also agrees and undertakes not to revoke this guarantee before the same is discharged as aforesaid except with the previous consent of the said purchaser in writing.

The guarantor here by further agrees that the said purchaser shall have the full liberty without effecting in any manner the obligation of the guarantor hereunder with or without the consent of the guarantor to vary any of the terms of the said contract or to extend time for performance of the said contract by the supplier from time to time or to postpone for any time or from time to time any of the power exercisable by the purchaser against the said supplier and either to forbear or enforce any of the terms or conditions relating to the said contract and the guarantor shall not be relieved from his liability by reasons of any variation or any extension being granted to the said supplier or for any forbearance, act or omission on the part of the said supplier or any indulgence by the said purchaser to the said supplier or any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving the guarantor. Nor shall it be necessary for the said purchaser to sue the said supplier before suing the said guarantor for the amount/damages due under the deed of guarantee.

In witness whereof the parties hereto put their respective hands on the day and the year first above mentioned.

1. Witness

2. Witness

Signature of the Guarantor

1. Witness

2. Witness

Signature of the Supplier

1. Witness

2. Witness

Signature of the CE/MM

For & on behalf of the DHBVN

**Note:-**

1. Date of execution of Bank Guarantee.
2. Name of Bank
3. Complete address of the Bank.
4. Name of the supplier
5. Permanent address of the firm
6. Quantity and description of material
7. PO No. and date
8. Payment clause
9. Amount of Bank Guarantee
10. %age of the contract price
11. Amount of Bank Guarantee should be both in figure and words
12. Name of the material
13. Bank guarantee amount
14. Number of months
15. Date of validity





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Annexure – VII

**Format of Affidavit for last completed Purchase Order**

I \_\_\_\_\_ Son of Shri \_\_\_\_\_ resident of \_\_\_\_\_ solemnly affirm and declare that I am holding the position as \_\_\_\_\_ the M/s \_\_\_\_\_ and I further hereby declare that.

1. Our last supply to any Govt. Power Utility in India is of \_\_\_\_\_ Power Transformers of rating \_\_\_\_\_ to \_\_\_\_\_ (Name of the Power Utility) against P.O. No. \_\_\_\_\_ dated \_\_\_\_\_ and we have supplied more than 50% of ordered quantity within delivery schedule (copy of P.O. along with copy of receipted challan enclosed)

Deponent

Verification

I, the above said deponent solemnly affirm and declare that the above said statement is true and correct to the best of my knowledge and belief and nothing has been concealed therein.

Deponent\_\_\_\_\_

Date:-

NIT No. \_\_\_\_\_  
Enquiry No. \_\_\_\_\_

Attested by Notary Public



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**Annexure – VIII**

TO BE SUBMITTED ON FIRMS LETTER HEAD

***DULY ATTESTED BY CHARTERED ACCOUNTANT***

The firm M/s \_\_\_\_\_ has supplied following quantity of material to state/Central Govt. organization during last 5 years.

Sr. no.	Financial year	Name of the item	Quantity billed	Total bill value of items	Remarks
1.					
2.					
3.					
4.					
5.					

(The above information should be supported by documentary evidence)



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Annexure – IX

### Undertaking

From

To

The Chief Engineer/MM,  
DHBVN, Hisar

**Subject;- Undertaking in respect of Tender Enquiry no. QD-778 for the procurement of 12.5 MVA, 33/11 KV Power Transformer.**

We hereby confirm our unconditional acceptance of all the terms and conditions mentioned in the tender documents against your tender enquiry no. QD- 778 for the procurement of 12.5 MVA,33/11 KV Power Transformer. The material shall be supplied strictly as per technical specification of the Nigam/relevant ISS without any deviation.

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(Authorized Signatory of the firm)

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Annexure – X

### **AFFIDAVIT FOR NON BLACKLISTING**

(On NJSP)

I, \_\_\_\_\_ Director of M/s \_\_\_\_\_ with \_\_\_\_\_ Headquarter at \_\_\_\_\_ being their authorized signatory, do hereby solemnly affirm and declare that M/S \_\_\_\_\_ is not blacklisted by any State/Central Govt. or any of its agencies. I understand that if upon acceptance of our offer dated \_\_\_\_\_ against DHBVN/UHBVN tender enquiry No. \_\_\_\_\_ for supply of \_\_\_\_\_ any P.O. is placed upon us, the same is liable to be cancelled if this declaration is found wrong at any subsequent time and further I understand to compensate the UHBVN/DHBVN, for the consequences arising out of wrong declaration.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Attested by Notary Public



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Annexure-XI

***Price Schedule as provided in the Electronic tender at website***

Tender Enquiry No. (0)	Item Description (1)	HSN Code (2)	NIT Quantity (Total Min. Qty.) (3)	NIT Quantity (Total Max. Qty.) (4)	Unit (5)	Place of billing (Haryana /Out of Haryana) (6)	Quantity Offered (Minimum) (7)	FOR Destination rates without GST in Rs. Per /Unit (8)	GST % rates (9)	GST in Rupees (10)	Any other duty/levy in Rs. Per /Unit (if applicable) (11)	Total amount (In Rs. Col No. (8+10+11) (12)
QD-778	12.5 MVA P/T											