

NORTH EASTERN ELECTRIC POWER CORPORATION LTD.

(A GOVERNMENT OF INDIA ENTERPRISE)

Tuirial Hydro Electric Project, MIZORAM

Fax 03837-263214, Telephone No.03837-263251

Email: trhep_hop@rediffmail.com



ISO: 9001, 14001
& OHSIS: 18001

TENDER DOCUMENT FOR

FOR

**SUPPLY OF 33/0.415 kV, 500 kVA, 3Ø DISTRIBUTION TRANSFORMER FOR
2X30 MWTuirial Hydro Electric Project, MIZORAM
(NIT NO. 2 Dated 27.01.2018)**

ELECTRO MECHANICAL COMPLEX, TrHEP:: MIZORAM



NORTH EASTERN ELECTRIC POWER CORP. LIMITED

(A Government of India Enterprise)

Tuirial Hydro Electric Project, MIZORAM

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NOTICE INVITING TENDER

NOTICE INVITING TENDER (NIT) No. 2 Dated

Sealed tenders with 120 days validity are invited from manufacturers / reputed vendors having authorized dealership/distributorship certificate for supply of the following item at Tuirial Hydro Electric Project, Mizoram. The bidder should have experience in supplying similar type of materials to Government / Public Sector Undertaking or renowned and reputed organization in India.

Sl. No	Description	Quantity
1	Supply of 33/0.415 kV, 500 kVA, 3 Phase, Dyn11 Distribution Transformer as per specifications indicated in the tender document	1 (One)

Last date of submission of NIT : 28.02.2018 upto 12:00 Hrs.

Date of opening of NIT : 28.02.2018 at 13:00 Hrs.

Time of completion of supply : 90 (Ninety) days from the date of receipt of formal order.

The complete set of tender document containing detailed terms and conditions shall be available for downloading in the website www.neepco.co.in from **29.01.2018 to 28.02.2018**. The interested bidders are requested to submit the duly filled in hard copy of the downloaded document along with all documents mentioned in the terms & conditions including cost of tender documents & earnest money as per prescribed format. The tender document containing detailed terms and conditions may also be collected from the office of the undersigned by depositing Rupees 500.00 (Rupees Five Hundred) only in the form of Call Deposit or Demand Draft only from any nationalized / scheduled bank in favour of "North Eastern Electric Power Corporation Ltd." payable at the State Bank of India, Tuirial Branch, Mizoram (IFSC Code SBIN0018311).

Tender document should be accompanied by an Earnest Money @ 2% (@1% for SC & ST) on the quoted amount in the form of Call Deposit or Demand Draft only from any nationalized bank in favour of "North Eastern Electric Power Corporation Ltd." payable at the State Bank of India, Tuirial Branch, Mizoram (IFSC Code SBIN0018311) valid for at least three months. Tender not accompanied with requisite EMD or with EMD of inadequate value shall be rejected outright.

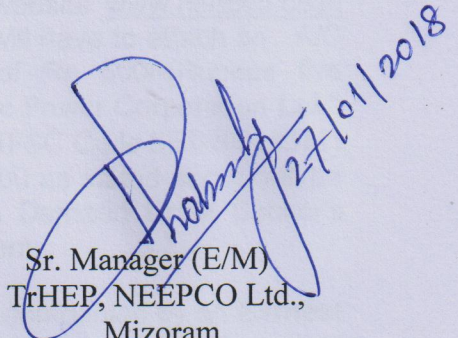
The tender documents completed in all respects should be dropped in the Tender Box kept at our Transit Office at Silchar, address of which is indicated below. Vendors may also submit the tender document in sealed covers through courier/registered post to reach

to the following address on or before 28.02.2018 up to 12.00 hours. The Corporation shall not be responsible in any way for delay in receipt of tenders through courier/posts etc. Tenders received after the stipulated date and time shall be summarily rejected. The tender will be opened at 13.00 hours on the same day (i.e on 28.02.2018) at Silchar Transit Camp in presence of the bidders or their authorized representative, if any. In case any of the date/dates mentioned above is declared to be a holiday, the next working day shall automatically be considered as the valid date.

NEEPCO reserves the right to accept any tender or award the supply/work in part or in full or in any manner at its sole discretion or reject any or all tenders without assigning any reason thereof. Further the Corporation is not bound to accept the lowest tender.

Address for submission of tender :

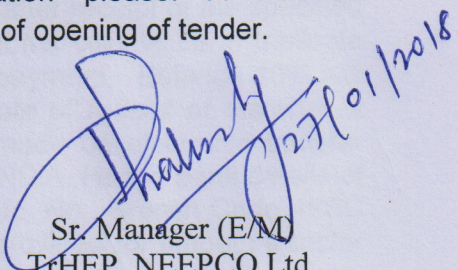
Sr. Manager (E/M),
Tuirial H.E. Project, NEEPCO Ltd.
C/o NEEPCO Transit Camp,
City Arcade, 3rd Floor, Sonai Road, Rangirkhari,
Silchar-788005 (ASSAM)


Sr. Manager (E/M)
TrHEP, NEEPCO Ltd.,
Mizoram

Memo No. NEEPCO/TrHEP/ EMC/T-11/ 2017-18/ 1107-1110 Dtd 27.01.2018

Copy to:

1. The Head Of Project, TrHEP, NEEPCO Ltd. for favour of kind information please. This has reference to the cocurrence given by him vide U.O.No. 3080 Dated 25.01.2018.
2. The Dy. General Manager (IT)-II, IT Dept., NEEPCO Ltd, Shillong, with a request
3. to upload the NIT in NEEPCO website.
4. The Senior Manager (F), TrHEP, for information please. A Finance representative is requested to be deputed at the time of opening of tender.
5. Notice Boards.


Sr. Manager (E/M)
TrHEP, NEEPCO Ltd.,
Mizoram

Terms & Conditions

1. **Scope of work :** The scope of work includes supply of One number of 33/0.415 kV, 500 kVA, 3 Phase, Dyn11 Distribution Transformer as per specifications indicated in the Tender Document at Tuirial Hydro Electric Project site in Mizoram.
2. **Bid validity :** 120 days from the date of opening of bids.
3. **Cost of Tender Paper:** Rupees 500.00 (Rupees five hundred) only in the form of A/C Payee Demand Draft/Banker's Cheque (non-refundable) duly pledged in favour of "North Eastern Electric Power Corporation Ltd." payable at the State Bank of India, Tuirial Branch, Mizoram (IFSC Code SBIN0018311).

The tender document can be downloaded from NEEPCO website www.neepco.co.in from 29.01.2018 to 28.02.2018 up to 12.00 Hrs. The bidders will have to attach an A/C Payee Demand Draft/Banker's Cheque (non-refundable) of Rs 500/- (Rupees five hundred only) duly pledged in favour of "North Eastern Electric Power Corporation Ltd." payable at the State Bank of India, Tuirial Branch, Mizoram (IFSC Code SBIN0018311) as cost of Tender Paper. Bid without the payment of Rs 500.00 as stated above will be rejected outright. The date of purchase of said A/C Payee Demand Draft/ Banker's Cheque should be within the period of issue of Tender document.

4. **Earnest money:** The complete tender document should be accompanied by an **Earnest Money @ 2% (@1% for SC & ST) on the quoted amount** in the form of Call Deposit or Demand Draft only from any Nationalized bank in favour of "North Eastern Electric Power Corporation Ltd." payable at the State Bank of India, Tuirial Branch, Mizoram (IFSC Code SBIN0018311) valid for at least three months. Tender not accompanied with requisite EMD or with EMD of inadequate value shall be rejected outright.
5. **Rate :** Rates quoted by the bidders should be exclusive of GST. Freight, insurance, loading & unloading charges etc. shall be in bidder's scope with no additional cost to NEEPCO and should remain firm till completion of the entire work in all respect in terms of NIT. GST Number /Provisional ID. of North Eastern Electric Power Corporation Ltd. (NEEPCO), Tuirial Hydro Electric Project, Mizoram is **15AAACN9991J1ZX**.
6. **Payment:** 90% payment shall be made within 30 (thirty) days after receipt of the specified items in full & good condition at site. The bidder has to submit bill/invoice in triplicate along with necessary documents for release of admissible payment. Balance 10% will be released after 12 (Twelve) calendar months from the date of receipt of material at site. No part payment will be allowed. Payment shall be made on electronic transfer basis through State Bank of India, Tuirial Branch, Mizoram, INDIA. Hence bank details of the supplier, such as - name of bidder, name of the bank, A/c. No., Branch Code, IFSC code, photo copy of PAN Card, GSTIN No etc. should be provided for smooth transfer of payment.

7. **Security Deposit:** An amount @ 10% of the admissible payment to the successful bidder will be deducted as security deposit and shall be released after 12 (twelve) calendar months from the date of completion of supply of material at site.
8. **Warranty :** The items must be under warranty for a period of minimum 12 (twelve) calendar months. During the warrantee period, if any defect/malfunctioning of the items are noticed the same shall be informed to the supplier and the supplier shall rectify the same or replace the defective item free of cost at the purchaser's site at the earliest possible time, latest by within a period of 15 (Fifteen) days of notification.
9. **Delivery period :** The entire work have to be completed within 90 (Ninety) days from the date of receipt of formal order.
10. **FOR :** Tuirial Hydro Electric Project, Mizoram

General Terms & Conditions

1. Bid must be submitted in sealed cover superscripting the NIT No. and name and address of the bidder on the cover. The bid will contain :
 - i). Details of bidder as per prescribed format.
 - ii). Detailed specifications of the Transformer. The specifications should preferably be accompanied by printed leaflets / brochures etc., if any, from the concerned brand/company.
2. Rates should be quoted both in figures and words legibly and no overwriting will be accepted. Rates shall be in Indian rupees and shall be firm and fixed.
3. Quoted rate should be firm and Exclusive of GST. No additional charges against freight, insurance, packing & forwarding etc will be paid to the bidder.
4. Telephonic Telegraphic, Telexed, emailed or Faxed tender shall not be considered.
5. North Eastern Electric Power Corporation Limited reserves the right to accept or reject any tender and withdraw the NIT without assigning any reason thereof whatsoever and in such case, no bidder shall have any right to raise any claim arising out of such action.
6. The rates should be valid for a period of 120 (one hundred twenty) days from the date of opening of bids.
7. Bidders having dealership of the quoted brand(s) have to attach copy of authorized dealership certificate from the company. The original certificate must be produced at the time of opening of bids or as and when asked for.
8. Tender paper should be signed by the bidder in all pages with seal.
9. Bids received late and/or not submitted in the prescribed formats or incomplete in any respect or not accompanied by prescribed documents shall be liable for rejection.
10. The specifications of the items given in the NIT are minimum. Bidder may add additional features without any extra cost to the purchaser.
11. Only those bidder(s) who meet all the guidelines and terms and conditions in all respects should submit their tender, complete in all respects.
12. Decision of North Eastern Electric Power Corporation Ltd. in respect of evaluation of bids shall be final. All disputes shall be subject to jurisdiction of courts in Silchar, Assam.

* * *

Details of Bidder

1. Name of Vendor :
2. Address with telephone number :
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.....
.....
Phone : E-mail :
Mobile No.....
3. Type of firm :(Ownership/Partnership/Pvt. Ltd./Ltd. Co.)
4. Year of establishment
5. Authorised dealer/distributor of
6. Dealership/distributorship valid up to
7. PAN No.
8. Bank A/C details :
Bank

Branch :IFSC Code :

A/C No.....
9. GSTIN registration No.
10. Details of Earnest Money and Cost of Tender (D.D.No. & Date) (deposited along with tender) :
11. CD / DD No.
12. Date :
13. Amount (Rs.)
14. Drawn on :

Signature with Seal of Vendor

Technical Specifications

TECHNICAL SPECIFICATION FOR 33/0.415KV,500 kVA, 3 Ø DISTRIBUTION TRANSFORMER

1. SCOPE :

This specification covers design, manufacture, assembly, testing at manufacturer's works, supply, delivery at site a 33/0.415KV ,500KVA, 3Ø, Dyn11 Outdoor type Distribution Transformer for efficient and trouble free operation. The transformer covered by this specification shall be complete in all respect. Any material or accessory which may not specifically mentioned here but which is usual and necessary for satisfactory and trouble free operation and maintenance of the transformer, shall be supplied without any extra charge.

2. STANDARDS :

The transformer to be supplied shall comply with latest editions of the following standards:

IS: 1180	:	Specification of Outdoor type Oil-immersed Distribution Transformers upto and including 2500KVA, 33KV
IS: 2026	:	Specification for Power Transformers
IS: 335	:	Specification for insulating oil for Transformers
IS:2099	:	Bushing for alternating voltage above 1000 V
IS:6600	:	Guide for loading of oil immersed Transformers
IS:3637	:	Gas operated relay
IS:10028 -	:	Code of practice for selection, installation and maintenance of Transformer
IS:3639	:	Specification for fittings and accessories for Power Transformer.
IEC:76	:	Power Transformer
IEC:354	:	Loading Guide of Oil Immersed Transformer
IEC:137	:	Bushing for AC Voltages above 1000 V

The use of any international standards which ensure better or similar performance are acceptable. In such case copy of the salient points of the standard adopted shall be clearly indicated and a copy of standard in English language shall be furnished

3. I) DEVIATION :

Normally the offer should be as per Technical Specification without any deviation.

II) MODIFICATION :

If any modification felt necessary to improve performance, efficiency and utility of equipment, the same must be mentioned in the 'Modification schedule' with reasons duly supported by documentary evidences and advantages. Such modifications suggested may or may not be accepted, but the same must be submitted along with Bid documents. The modifications not mentioned in Schedule will not be considered.

4. GENERAL DESIGN:

- i) The transformer shall be suitable for outdoor installations in hot, humid & tropical climate.
- ii) The transformer shall be capable of continuous operation at the rated output subjected to following variations:

- a) Voltage variation +5 to - 10% of rated voltage
- b) Frequency variation +/- 3% of rated frequency i.e 50 Hz.

- iii) Vibration and noise levels of the transformer shall be minimum. The center of gravity of transformer must be as low and as near the vertical centre line as practicable.
- iv) The transformer shall be designed to operate in overload conditions as per IEC-354 or IS: 6600. It shall also be able to withstand without damage, the effects of external short circuit as per IS: 2026.
- v) The maximum flux density in any part of the core and yoke at rated voltage & frequency shall be such that the flux density with +12.5 percent combined voltage & frequency variation from rated voltage and frequency shall not exceed 1.9 Tesla.

5. ACCESSORIES & FITTING:

The Transformer shall be complete with necessary fittings and accessories, such as:

- i) Bushings.
- ii) Conservator mounted on transformer tank with shut off valves between conservator and main tank.
- iii) Oil level gauge with low-level alarm contacts.
- iv) Dehydrating breather.
- v) Externally mounted, 3 phase gang operated OFF load tap changing switch with tap marking.
- vi) Lifting eyes for top cover.
- vii) Lifting eyes for core and winding.
- viii) Lifting eyes for lifting complete transformer by crane and also by jacks.
- ix) Inspection covers.
- x) Oil sampling valves at top and at bottom.
- xi) Filter inlet and outlet valves with nozzles at the bottom corner and at the diagonally opposite top of the tank corner.
- xii) Mounting arrangement for transformers shall be suitable for mounting on rollers as per latest edition of IS-1180 (Part-1).
- xiii) Earthing terminals suitable to withstand maximum fault current
- xiv) Dial type thermometer for oil temperature indication and winding temperature indication with maximum reading pointer and separate sets of contact for alarm and trip.
- xv) Pocket for inserting thermometer for oil temperature measurement.

- xvi) Rating plate and diagram plate.
- xvii) Buchholz (gas) relay, double float type with one set of alarm and one set of trip contacts with testing petcocks.
- xviii) Insulating oil required for first filling.
- xix) Pressure relief device.
- xx) Oil drain valve at bottom.

Any other accessories other than those mentioned above if required for successful operation of transformer shall also be within the scope of supply.

6. CONSTRUCTIONAL FEATURES :

6.1 CORE :

It shall be made from high grade non-ageing, low Hysteresis loss and high permeability cold rolled grain oriented silicon steel laminations of M4 grade.

- i) The whole core shall be electrically connected by copper strip of not less than 6.25 sqmm. cross section to the tank inside for being earthed to drain off any electrostatic potential that may build up.
- ii) Each core bolt and part of the core clamping frame work shall be insulated from the core lamination. The core shall be tested to withstand a voltage of 2500 volts A.C. for duration of one minute.
- iii) The prime core materials are only to be used. Bidder's should furnish necessary document as applicable as a proof towards use of prime core material
- iv) The transformer shall be subjected to routine test and no load and load loss measurement as per relevant IS as mentioned in the clause "TEST AT FACTORY AND TEST CERTIFICATES".

6.2 WINDING :

- i) The winding shall be made of paper insulated continuous and smooth electrolytic copper conductor and shall be so designed that all the coil assemblies of identical voltage rating shall be interchangeable and field repairs to the winding can be made without special equipment. The insulation of the coils and assembly of windings shall be insoluble, non-catalytic, and chemically inactive in the hot transformer oil. The insulation shall be of class "A" category.
- ii) Liberal ducts shall be provided for oil circulation and prevention of any hot spot temperature in the winding that may affect the life of the transformers.
- iii) Windings and leads shall be suitable to withstand short circuit stresses and other vibrations. Guide tubes must be provided where possible.
- iv) Joints must be welded or soldered with silver solder specially formulated for use on heavy copper connections. Bolt or clamp type connections must be used at the bushings, tap switch shall be provided with suitable locking devices to prevent loosening of connections.

- v) Coil and core assemblies must be dried in full vacuum to ensure elimination of air and moisture within it.

6.3 TANK:

The tank and cover of the transformer must be of good commercial grade low carbon steel of adequate thickness. The thickness of top, bottom and side plates shall be stated in the tender. Joint of tank and cover shall be tightened by bolts.

- i) The tank shall be so shaped as to reduce welding to a minimum. All seams shall be double welded where practicable. The completely assembled transformer must be designed to withstand, without permanent deformation, a pressure of 25% greater than the maximum operating pressures resulting from the system of oil preservation used. The tank must be designed for filling with oil under full vacuum.
- ii) Bushing turret covers, access holes covers, pockets of thermometers shall be so designed to prevent any ingress or collection of water.
- iii) Any compressible gasket which can be damaged by over compression must have metallic stops to prevent over compression. Guides within the tank or other satisfactory means must be provided for locating the core and coils when they are lowered into or removed from tank. Ample space must be there below core and coil for sediment to collect.
- iv) Design shall be such that Tank Cover can be lifted independently without lifting active part of core, winding etc.

6.4 COOLING:

- i) Transformer shall be suitable for 100% continuous maximum current rating with ONAN Cooling within the specified maximum temperature rise of 40°C for oil & 45°C rise for winding.
- ii) Radiators are to be used for cooling. They must withstand the vacuum pressure conditions specified for the tank and shall be accessible for cleaning and painting.

Radiators may be removable and connected to the tank by machined flanges radiator tubes or are fixed to the tank by welding.

6.5 BUSHINGS :

All bushings shall conform to the requirements of latest revision of IS:3347. Bushings must be well processed, homogenous and free from cavities or other flaws. Glazing must be uniform in colour and free from blisters, burns and other defects. 33 KV bushings shall have creepage distance of minimum 900 mm.

6.6 TAP CHANGER/TAPPINGS :

- i) The OFF load tap changing shall be effected by an external 3 phase gang operated tap changing switch. The operation shaft shall be brought out of the tank and provided with hand wheel so that it can be operated at standing height from G.L. and be easily accessible.

- ii) A visual tap position indicator shall be provided near the operating handle and provision shall be made to pad lock the handle in each tap position. The locking arrangement shall be such that pad lock cannot be inserted unless required contacts corresponding to the tap position are correctly connected with full contact pressure.
- iii) All contacts of the tapping shall be silver plated and held in position under strong contact pressure.
- iv) Taps shall be provided on high voltage windings.
- v) Any improved design may be offered with complete literature.

6.7 Conservator:

Oil preservation shall be made by means of conservator tank. It shall be suitably mounted on a transformer tank. The conservator shall be connected with main tank by the pipe through Buchholz Relay with necessary stop valves at both ends of Buchholz relay.

- i) Conservator tank shall be provided with dial type oil level indicator, visible from the G.L. and fitted with low oil level alarm contact.
- ii) Conservator tank shall be provided with dehydrating breathers .
- iii) The Buchholz relay shall have two contacts one for alarm and the other for tripping. The relay shall also comprise of a drain cock, air vent, and facility of testing with air injection / mechanical testing facility.

6.8 TERMINAL ARRANGEMENT

i) 33 KV SIDE :

The terminals shall be through outdoor type bushings conforming to IS:2099 (latest edition) and provided with Bi-metallic terminal connectors (rigid type) suitable for ACSR conductor / Al. tube

ii) L.V. SIDE & Neutral side:

Connection from transformer LV terminal to the respective 415 V switchgears shall be made through three phase 4 core PVC Aluminium Cable. LT terminals of transformers shall be brought out through LV Bushing on top cover mounted or side wall mounted bushing enclosed by a termination box with cover. The neutral terminal shall be brought out along with the LV terminals through a separate bushing for connection to the respective switchgear neutral bus.

6.9 MARSHALLING BOX :

Sheet steel enclosed marshalling box (cold rolled thick sheet steel of thickness minimum 2 mm with powder coated paint or 3.0 mm (min) thick hot rolled with or without power coating paint) having degree of protection IP 55 as per IS : 13947 should be supplied with the transformer. Local cabling from field instruments like Buchholz relay, WTI CT, MOG etc. shall be within the scope of supply. WTI, OTI etc. should be mounted inside the marshalling box.

6.10 INSULATING OIL :

The oil shall conform to IS: 335-1983.

6.11 PAINTING :

- i) All steel surfaces shall be cleaned by sand blasting or chemical process as required to produce a heat resistant oil insoluble insulating varnish.
- ii) External surfaces shall be given a coat of high quality red or yellow chromate primer and finished with two coats of synthetic enamel paint shade 631 as per ISS.
- iii) Paints shall be carefully selected to withstand tropical heat, rain etc. The paint shall not scale off or crinkle or be removed by abrasion due to normal handling.

6.12 MOUNTING ARRANGEMENT :

Mounting arrangement of the transformers shall be such that the bottom of the tank is at a sufficient height above foundation for cleaning purpose. Transformers shall be mounted on rollers as per latest edition of IS-1180 (Part-1).

6.13 FOUNDATION AND STEEL STRUCTURE :

The transformers shall be furnished complete with base frame, anchor/foundation bolts and hardware.

7. CONTRACT DRAWINGS AND MANUALS:

In the event of placement of Letter of Award the following drawings & G.T.P are to be submitted in Three (3) copies:

- i) Typical general arrangement drawing showing constructional features of the transformers giving tentative dimensions, weights and clearances.
- ii) Sectional view showing disposition of various fittings and accessories .
- iii) Bushings drawings, GA, sectional drawing with technical parameters.
- iv) Dimension of the largest package to be shipped and the mode of transportation .
- v) Wheel base details.
- vi) Type test certificates of similar transformers previously manufactured .
- viii) Leaflets on : Buchholz Relay , Temperature indicator , Tap changer , H.V. & L.V. bushings , Oil level gauge , Off load tap changer etc.
- ix) Drawings of plan and elevations in details showing wheel loading , center of gravity etc.
- x) Foundation drawing .
- xi) Name plate , Rating plate Drawings .
- xii) Control schematic and wiring diagram .

- xiii) Transport and shipping package details .

Three (3) copies of operation, maintenance and erection manuals shall be supplied. The manuals shall contain all the drawings and information required for erection, operation and maintenance of the transformer. The manuals shall particularly contain marked erection prints identifying the component parts of the transformer, with assembly drawings.

8. TESTS AT MANUFACTURER'S WORKS AND TEST CERTIFICATES :

All routine tests as per stipulation of relevant Indian Standard at manufacturer's works shall be carried out and the test reports are to be submitted to NEEPCO. The entire cost of routine test that are to be carried out as per relevant IS shall be in contractor / manufacturer's scope.

The following tests shall be carried out on all transformers as a part of routine test as per IS-2026 and as per our standard requirement.

- i) Resistance of each winding at all taps (wherever applicable).
- ii) Ratio Test for all taps.
- iii) Polarity, phase vector relationship and terminal markings.
- iv) Measurement of No Load Loss and No Load Current at 90, 100 and 110 percent rated voltage.
- v) Measurement of load losses.
- vi) Impedance voltage at normal, maximum and minimum tap for each pair of winding.
- vii) Regulation at rated load and at unity, 0.8 lagging p.f.
- viii) Efficiencies at u.p.f. 0.8 p.f. at 50%, 75% and 100% loading.
- ix) Separate source voltage withstand test.
- x) Induced over-voltage withstand test.
- xi) Magnetic Balance test.
- xii) Physical verification and dimension checking.
- xiii) Oil leakage test on transformer as per CBIP for 12 hours (min.)
- xiv) Measurement of Tan Delta and Capacitance of windings and bushing.
- xv) Zero sequence impedance measurement.

xvi) Insulation resistance between windings and windings to earth.

Following tests shall be performed on finished & empty tank at free of cost and copies of test results are to be submitted to NEEPCO.

- i) Vacuum withstand strength of tank shall be tested at a maximum internal pressure of 3.33 KN/m² for one hour. The permanent deflection shall not exceed the value specified in CBIP manual.
- ii) Pressure Test : Pressure test shall be subjected to a pressure corresponding to twice the normal head of oil or to the normal pressure plus 35KN/m² 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 released shall not exceed the value specified in CBIP manual.

9. TRANSFORMER LOSSES :

Bidder shall state the transformer losses viz (a) Iron loss (b) Load loss. And the maximum loss shall be guided by IS:1180 (Part-1) 2004 or it's latest edition. Transformer losses shall be taken into account during tender evaluation. The losses at rated load, rated voltage and frequency shall be guaranteed with tolerance limits as specified in IS:2026 .

11 GURANTEE :

Electrical characteristics shall be guaranteed by the bidder. In case of failure of materials to meet the guarantee, NEEPCO shall have right to reject the material. Guaranteed Technical Particulars are to be submitted by bidder along with bid documents.

SPECIFIC TECHNICAL PARAMETERS FOR DISTRIBUTION TRANSFORMER

1.	RATING	:	500 KVA
2.	NO LOAD VOLTAGE RATIO	:	33 KV/ 0.415 KV
3.	PF WITHSTAND VOLT	:	70 KVrms
4.	LI VOLT	:	170 KVp
5.	RATED HV CURRENT	:	
6.	RATED LV CURRENT	:	
7.	STC	:	25 KA FOR 3 SEC
8.	PHASE	:	3
9.	FREQUENCY	:	50 Hz
10.	VECTOR	:	DELTA/STAR WITH BROUGHT OUT NEUTRAL AT LV -Dyn11.
11.	IMPEDANCE VOLT	:	4.5%
12.	TAP	:	OFF LOAD TAP CHANGER: +5% to -10% in steps of 2.5% on H.V. side
13.	INSULATION	:	OIL IMMERSSED
14.	COOLING	:	ONAN
15.	TEMP RISE OVER AMBIENT -OIL	:	40oC
16.	TEMP RISE OVER AMBIENT - WINDING	:	45oC

**GUARANTEED TECHNICAL PARTICULARS FOR
33/0.415KV STATION SERVICE TRANSFORMERS
(To be filled in and signed by the Bidder)**

Sl. No.	DESCRIPTION	
	GENERAL	
1.01	Name of Manufacturer	
1.02	Manufacturer's Type	
1.03	Conforming Standard	
1.04	Date of Last Type Test	
1.05	Dimension of the Main Tank (L x B x H)	
1.06	Weight of the Transformer with oil	
1.07	Volume of the Oil (KL)	
1.08	Continuous maximum KVA Rating	
1.09	Primary Voltage (Volt)	
1.10	Secondary Voltage (Volt)	
1.11	No load voltage ratio	
1.12	Primary Current (Amp)	
1.13	Secondary Current (Amp)	
1.14	Vector Group	
	Insulation Level	
2.01	Power frequency withstand voltage (KV rms)	
2.01.1	On H.V. side	
2.01.2	On L.V. side	
2.02	Full wave Lightning Impulse withstand voltage	
2.02.1	HV Winding(KVp)	
2.02.2	LV Winding (KVp)	
2.03	Induced over voltage (KV rms)	
2.03.1	HV Winding	
2.03.2	iLV Winding)	
3.0	Rated temperature rise over maximum ambient temperature (50°C) at rated output (°C)	
3.01	oil	
3.02	winding	
3.03	Hot spot temperature	
4	Exciting current referred to H.V. & 50 c/s at (Amp.)	
4.01	90% rated voltage	
4.02	100% rated voltage	
4.03	110% rated voltage	
4.04	Power factor of excitation current at 100% rated voltage and 50 c/s	
5	No load loss (Core loss) (KW) at 50 c/s and at	
5.01	90% rated voltage	
5.02	100% rated voltage	
5.03	110% rated voltage	
5.04	Copper (load) loss at 75°C (KW) (excluding aux. Loss)	

5.05	Aux. Loss	
5.06	Total loss at normal tap and at rated frequency and at 75°C (KW) winding temperature including aux. loss.	
6	Percentage Impedance at rated current and voltage (%)	
6.01	At normal tap	
6.02	At highest tap	
6.03	At lowest tap	
	Resistance per phase at 75°C (Ohm)	
7.01	H.V.	
7.02	L.V.	
8	Regulation at full load (75°C) and following p.f.	
8.01	unity p.f.	
8.02	0.90 lagging	
8.03	0.80 lagging	
9	Efficiency at unity & 0.8 p.f. (lag) at various loads (Unity p.f./ 0.8 p.f.)	
9.01	100% load	
9.02	75% load	
9.03	0% load	
9.04	25% load	
9.05	Zero sequence impedance (75°C) at normal tap & maximum/minimum tap positions (Ohm)	
10	Core particulars	
10.01	Materials & grade	
10.02	Thickness of stamping (mm)	
10.03	Flux density in the core at rated voltage and 50 c/s (Tesla)	
10.04	Flux density at 110% rated voltage and 50 c/s (Tesla)	
11	Windings :	
11.01	Current density in H.V. winding (Amp./Sq.cm.)	
11.02	Current density in low voltage winding (Amp./Sq.cm.)	
11.03	Phase to phase clearance of HV Bushing In Air	
11.04	Phase to phase clearance of LV Bushing In Air	
11.05	Phase to phase (L.V.)	
11.06	Clearance of HV Bushing terminal to ground	
12	Tap changer	
12.01	Type of tap changer	
12.02	Taps provided at Winding (Like HV or LV)	
12.03	Position of tap (Like on the neutral end or in the middle of the winding)	
12.04	No. of taps provided on the winding and % variation of each tap	
12.05	Permissible over loads, % of full load	
12.06	Core type or shell type	
13	HV Bushing	
13.01	Name of manufacturer	
13.02	Impulse withstand voltage on H.V. winding (KVp)	
13.03	1-min. P.F dry withstand voltage on H.V.Bushing (KV rms)	
13.04	1-min. P.F. wet withstand voltage on H.V.Bushing (KV rms)	
13.05	Details of L.T. Bushings and switch fuse assembly with regard to "Manufacturer", capacity & relevant technical particulars	