BHARAT HEAVY ELECTRICALS LIMITED
UNIT – BHOPAL
TRANSFORMER SERVICES DEPARTMENT (TXX)

TENDER NOTICE NO. TXX/TN/2010/20 **DATED: 24/11/2010**

Sub: Repair, re-erection & commissioning of 1 Nos. 200MVA, 400KV, BHEL Bhopal make, Generator Transformer lying at VTPS APGENCO, Vijaywada

Dear Sir(s),

Sealed tenders are invited for carrying out the subject work per the details given in the **Scope of Work (Clause No. 6.0)**, **Price-bid format (Annexure-I & J)** and other conditions as mentioned in the Tender Enquiry. The details of tender are as follows:

1.0) DATE & TIME OF RECEIPT OF THE TENDER: 10.12.2010 Till 11.00 Hrs.

2.0) DATE & TIME OF TENDER OPENING: 10.12.2010 AFTER 14.00 hrs.

3.0) PLACE OF TENDER SUBMISSION: "GREEN COLOURED WORKS CONTRACT TENDER BOX" placed in **Tender Room, Administrative Building, Ground Floor, BHEL, Bhopal – 462 022**

4.0) PROJECT:
Customer: M/s VTPS, APGENCO, Vijaywada Andhra Pradesh.

5.0) DETAILS OF EQUIPMENTS:

Sl.No.	Description	Value
1.	Equipment Detail	200MVA, 1-Ph, 21/420KV Generator transformer
2.	Weight of Main tank of GT	180 Tons
3.	Length of GT tank	6000 mm
4.	Width of GT tank	4000 mm
4.	Height of GT tank	4400 mm

6.0) SCOPE OF WORK :

6.1) 200MVA, 1-Phase, 400KV, BHEL Bhopal make Generator Transformer, Sl.No. 6006392 installed at 500MW, Unit-7 of VTPS APGENCO, Vijaywada has failed recently and is lying at the plant site. The tentative extent of damages on initial inspection and investigations are as mentioned below:

a) All the bushings of GT have been shattered and damaged.

b) Top tank badly damaged and deformed with multiple cracks.
c) Bottom tank rim flange also deformed.
d) HV turret CT's are burnt and are blackened from inside.
e) The windings are intact and no physical axial/radial movement or distortion observed. LV winding connections are intact. LV test reveals healthiness of windings but is to be ascertained after detailed inspection and test.
f) Laminations are found in healthy conditions and no pitting marks are observed on edges of packets. Cross beam of all locations on top yoke are in position and no abnormality has been observed.

6.2) The vendor is required to repair the transformer at their works. The complete work content, based on above preliminary investigations has been prepared and has been categorized in two alternatives.

Option-1: Repair of transformer using existing windings.
Option-2: Repair of transformer with replacement of windings, Terminal gear assembly & associated insulation also.

The alternative to be adopted shall be finalized after detailed inspection/ final testing at repairer's works.

6.3) The Scope of work (option-1 & option-2), Testing Procedure, Technical Data, Qualification criteria, Documents and General Terms & Conditions etc governing the contract are detailed in the Annexures listed below:

a) Scope of Work for Option-1 using existing winding (Annexure-A).
b) Scope of Work for Option-2 involving replacement of windings, Terminal gear assembly & associated insulation also (Annexure-B).
c) Qualification Criteria (Annexure-C)
d) Documents for contracting (Annexure-D)
e) Commercial Terms & Conditions (Annexure-E)
f) Guaranteed Technical Data (Annexure-F)
g) Technical Data for costing of repairs (Annexure-G)
h) Tests to be performed on transformer after repair as per option-1 (Annexure-H1)
i) Tests to be performed on transformer after repair as per option-2 (Annexure-H2)
j) Price Schedule Format for Scope of Work as per Option-1 (Annexure-I)
k) Price Schedule Format for Scope of Work as per Option-2 (Annexure-J)

The tenderer is required to ensure compliance to each clause mentioned in the annexures and submit offer with all relevant supporting documents.

7.0) <u>TENDERING PROCEDURE</u> :
The tender shall be accepted and processed as follows:

7.1) The Tender shall be submitted in **TWO PARTS,** as described below:

a) PART-I: (EMD, TENDER FEE & TECHNO-COMMERCIAL BID)
This part shall consist of the following:

i) EMD of amount, equivalent to value calculated as per clause (12.a) of Commercial Terms & Conditions (Annexure-E), in the form of Pay Order/ Bank Draft and drawn in favor of "**Bharat Heavy Electricals Limited**" payable at **Bhopal** shall be enclosed. In the absence of submission of EMD, the offer will be summarily rejected.

ii) Tender Fees of **Rs. 1000/-** in favor of **"Bharat Heavy Electricals Limited"** payable at **Bhopal**. In the absence of submission of same, the offer will be rejected.

iii) Techno-commercial offer comprising of:
a) Confirmation of Scope of Work, Commercial Terms & Conditions, Gauranteed Technical Data, Documents for contracting etc. Supporting documents for qualification criteria and other clauses as applicable etc.
b) Un-priced copy of PRICE FORMAT. *The un-priced copy of the Price bid format shall be the same as the Price bid but without the Prices. All the quoted Prices/Rates etc. shall be replaced with the word 'QUOTED" or 'Q', in the un-priced copy.*

b) PART-II: (PRICE BID)

i) Format containing **PRICES** only **(to be furnished in the enclosed Price Schedule format only)**. Prices shall be quoted in Indian Rupees only. Price Bid should not contain any technical details and/or Commercial Terms & Conditions as the same are supposed to be contained in PART-I only so that the same can be evaluated before opening of Price Bid(s).

ii) Price bids of only techno-commercially short listed vendors will be opened.

7.2) The above two bids (**Part-I and Part-II**) shall be enclosed in a sealed envelope and shall have tenderer's distinctive seal and shall be super-scribed with the **TENDER REF. NO and DUE DATE,** which for this tender is as mentioned below:

TENDER NO. TXX/TN/2010/20, Dated: 24.11.2010
TENDER OPENING DUE DATE: 10.12.2010

7.3) The Tender shall be addressed to the following:

To,

THE TENDER ROOM ('GREEN COLOURED WORKS CONTRACT TENDER BOX')
ADMINISTRATIVE BUILDING, GROUND FLOOR,
BHARAT HEAVY ELECTRICALS LTD,
P.O. PIPLANI, BHOPAL (M.P.) Pin-462022.

7.4) The tender shall be dropped in the above stipulated tender box positively **before 11.00 hrs on the due date (as mentioned at Clause.no. 1.0 & 13.2 above).** It will be bidder's responsibility to ensure submission of tender in the designated "**Green Coloured Works Contract Tender Box**" before expiry of due date and time. Any tender which is received after **11.00 Hrs on the due date and subsequently** shall not be considered and will be returned to the sender. No explanation/ reasoning for late submission/receipt of tender will be entertained.

7.5) Bidders may note that the PART-I: (EMD, TENDER FEE & TECHNO-COMMERCIAL BID) of the tender shall be opened in tender room of BHEL Bhopal on tender due date after 14.00 hrs in presence of those tenderer's who choose to be present.

7.6) The tenderer is advised to inspect the site and work environments & be acquainted with the actual working and other prevalent conditions, facilities available etc prior to submission of tender. No claim will be entertained later on grounds of lack of knowledge.

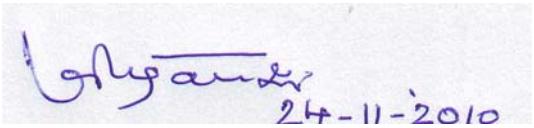
7.7) In case of any query/doubt on the tender specifications, bidder can contact the concerned authority for clarification before tender submission. No modification/ deviation w.r.t. any clause, terms & conditions etc shall be acceptable after opening of tender.

7.8) **Cost of the Tender documents is Rs. 1000/- (Rupees One Thousand only),** which is to be attached in the form of Demand Draft drawn in favor of BHEL, Bhopal (Payable at Bhopal) & is non-refundable. Cash deposit in BHEL cash office is also acceptable and the receipt of the same shall be enclosed. Tender received without remittance of tender cost will not be considered & will be rejected

Thanking You,

Yours Faithfully,

For and on behalf of BHEL Bhopal,



G.PRAKASH
(AGM/TXX)
Transformer Service Department
Block – III Central Annexe, 1st floor,
Bharat Heavy Electricals Limited, Bhopal (MP), Pin – 462022

ANNEXURE- A

SCOPE OF WORK (OPTION-1):

Repair of transformer using existing windings: The work content as enlisted below shall be applicable in case where the windings are found healthy and are to be retained. The list is tentative and is based on initial assessment; however the vendor will have to agree to undertake work not listed below but is necessary for successful repair and commissioning of transformer.

Sl No	Work content in case which involves re-use of existing windings and associated insulation
1)	- Dismantling at site, blanking of openings and making ready for loading
2).	- Loading on Trailer and transportation to works (N2 filled)
3).	- Dispatch of accessories required for testing of GT after repairs, to works
4).	- Transit insurance for transportation to works
5).	- Unloading at works and making ready for inspection
6).	- Opening and Dismantling at works for internal inspection, LV tests
7).	- Repair of Bottom Tank without removing the active part assembly
8).	- Replacement with new Top Tank fitted with wall shunts
9).	- Replacement with new HV line lead with Aluminum tube
10)	- Replacement with new HV Turret and Bushing CTs
11)	- Repair/replacement of Tap-changer selector and diverter
12)	- Replacement with new HV, LV and Tapping Terminal Gear assembly including cleats
13)	- Replacement with new HV,LV and Neutral bushing
14)	- Replacement of 17.5 KV core isolation bushing
15)	- Replacement of all sealing gaskets
16)	- VPD processing of re-assembled Transformer
17)	- Servicing of other reused items/parts
18)	- Oil filling, circulation and making ready for testing
19)	- Testing of Transformer as per testing procedure listed separately in enclosed Annexure-H1
20)	- Draining of Oil, Dismantling and making ready for dispatch
21)	- Repainting of complete Transformer
22)	- Loading on Trailer and transportation to site (N2 filled)
23)	- Dispatch of balance accessories to site including fresh set of erection gaskets
24)	- Transit insurance for transportation to site
25)	- Re-erection, testing and commissioning at site

Signature of vendor with date & seal

ANNEXURE- B

SCOPE OF WORK (OPTION-2):

Repair of transformer with replacement of windings, terminal gear and associated insulation also: The work content as mentioned below shall be applicable in case the windings are found damaged and are required to be replaced. The list is tentative and is based on initial assessment; however the vendor will have to agree to undertake work not listed below but is necessary for successful repair and commissioning of transformer.

Sl No	Work content which involves replacement of windings, terminal gear and associated insulation EITHER immediately after initial dismantling and inspection OR due to winding failure at time of final testing against Option-1
1)	- Dismantling at site, blanking of openings and making ready for loading
2)	- Loading on Trailer and transportation to works (N2 filled)
3)	- Dispatch of accessories required for testing of GT after repairs, to works
4)	- Transit insurance for transportation to works
5)	- Unloading at works and making ready for inspection
6)	- Opening and Dismantling at works for internal inspection, LV tests
7)	- Repair of Bottom tank without removing the active part assembly
8)	- Unlacing, removal of old winding assembly, Cleaning of core
9)	- Manufacturing of new winding assembly with terminal gear and associated insulation
10)	- Assembly of new winding and existing core and re-lacing
11)	- Replacement with new Top tank fitted with wall shunts
12)	- Replacement with new HV line lead with Aluminum tube
13)	- Replacement with new HV Turret and Bushing CTs
14)	- Replacement with new HV, LV and Tapping Terminal Gear assembly including cleats
15)	- Replacement of damaged Tap-changer assembly selector and diverter
16)	- Replacement with new HV,LV and Neutral bushing
17)	- Replacement of 17.5 KV core isolation bushing
18)	- Replacement of complete insulation material between bottom tank and bottom yoke
19)	- Replacement of all sealing gaskets
20)	- VPD processing of re-assembled Transformer
21)	- Servicing of other reused items/parts
22)	- Oil filling, circulation and making ready for testing
23)	- Testing of Transformer as per testing procedure separately enclosed at Annexure-H2
24)	- Draining of Oil, Dismantling and making ready for dispatch
25)	- Repainting of complete Transformer
26)	- Loading on Trailer and transportation to site (N2 filled)
27)	- Dispatch of balance accessories to site including fresh set of erection gaskets
28)	- Transit insurance for transportation to site
29)	- Re-erection, testing and commissioning at site

Signature of vendor with date & seal

ANNEXURE – C

QUALIFICATION CRITERIA

AA) Experience and Capability

i) Should have repaired/refurbished transformers, which shall include at-least 5 Nos. BHEL make transformers and at-least 2 Nos of them shall be of 400 KV class, involving manufacture of new winding and associated insulation at own works as on date of tender due date.
(The bidder will have to submit documentary proof including customer/third party witnessed final test report, dispatch documents and proof of receipt of payment for the same, along with the part-1 offer)
AND
Should have at least 2 years experience in manufacturing/repair/refurbishment, testing, commissioning of transformers upto and including 400 KV at own works either of own make or of other make as on date of tender due date.
(The bidder will have to submit documentary proof for the same, along with the part-1 offer)
AND
Should submit Performance Certificate from customer for at least one nos. 400 KV Transformers manufactured/ repaired/refurbished by them at their own works, towards satisfactory site operation of at least one year as on date of tender due date.

BB) Financial

i) Annual Financial Turnover during any one of last 3 years ending 31st March of the previous financial year should not be less than Rs 100 Crore.

ii) Should have adequate Bank solvency of Rs 50 Crore and above as on 31st March of the previous financial year. A certificate in this regards from Nationalised/Scheduled Bank shall be required.

iii) Should agree to submit the various Bank Guarantee as specified in Annexure-E , Commercial Terms and Conditions.

CC) Infrastructure and Facility

i) Should have qualified vendor base for tank fabrication, core clamping structure and other related works

ii) **Manufacturing and Processing facility (minimum)** :

1 150T Core building platform
2 200T EOT crane
3 Vertical and Horizontal winding machines under controlled environment (25T capacity/2800 mm dia/3000mm height) along with proper moulds.
4 VPD required to suit/accommodate transformer of dimension 6m(L)x4m(W)x5m(H)
5 Hydraulic press 300T capacity
6 High frequency Brazing machines for various types of joints of copper conductors
7 Welding machines
8 Oil storage and filling facility
9 Oil filtration plant

10 Vacuum pumping system
11 Coil and Winding lifting arrangement

iii) **Testing facility (to test in line with IEC 60076)** :

Shall have an attached Test lab equipped with at least following test facilities:

1 LI FW 1550 kVP, LI CW 1570 kVP, SI 1180 kVP
2 ACSD 630 KV rms (both 3-phase and 1-phase method as per IEC)
3 ACLD upto 1.7 um/√3
4 SFRA kit
5 PD measurement kit
6 Alternator for loss and temperature rise measurement
7 Other capacitor bank, Testing transformer, Other test measurement kits
8 Oil testing facility (atleast BDV/PPM/ Resistivity/Tan delta/IFT)
9 Tie up for balance testing of Oil with reputed/recognized lab

iv) **Manufacturing and Engineering** :

Should have own qualified welders, brazers, experienced winders, experienced HV test engineers, qualified and experienced design engineers upto 400 KV including design softwares, drawing office.

v) **Erection & Commissioning:**

Should have adequate qualified and trained manpower, all material handling and test equipments, filter machines, vacuum pumps etc for carrying out E&C work at site.

vi) **After Sales service** :
Should have dedicated technical team under own control for repair/ refurbishment activity at site anywhere in India.

vii) **Before opening of price bids, a separately constituted BHEL team shall visit the works of party to assess the above infrastructure and facilities.**

ANNEXURE – D

DOCUMENTS FOR CONTRACTING

AA) Legal agreements :

i) The party will have to enter into legal agreement with BHEL for IPR, Technology protection, Confidentiality including the following:

- The drawings and documents provided by BHEL will be used only for the specific purpose for which it is issued.
- The drawings and documents provided by BHEL will be returned back (in same condition) after completion of the order.

ii) The party will have to enter into legal agreement with BHEL for Non-competition agreement for BHEL make Transformers and/or using drawings/documents provided by BHEL.

iii) The proforma for all such legal documents will be provided during contracting process.

iv) The validity of above legal documents will be 10 (ten) years from its date of last contract with BHEL.

BB) Terms & Conditions :

- As per separately enclosed Annexure-E (Commercial Terms & Conditions)

CC) Guaranteed Technical data sheet :

- The vendor will be required to meet such Guaranteed Technical Data (**as per separately enclosed Annexure-F**) at the time of final testing of Transformer after repair. These are essential acceptance criteria and are subject to either rejection of Transformer or levy of Liquidated damages, both solely at the discretion of BHEL and/or Customer.

DD) Technical data sheet for costing :

- The technical data sheet for the transformer is enclosed in **Annexure-G**. The vendor will be required to carefully review, study and analyse this document so as to assess the repair content and cost of repair of a particular Transformer for submitting the Price bid.

EE) Procedure for working on cost of repair, order for repair etc :

- It is presumed that all the vendors are established in field of manufacturing and testing of Power Transformers. Accordingly, BHEL need not either explain or document the various activities and processes involved in total work required from accepting a Transformer for repair at works till its successful dispatch after repair.

- For carrying out the repair/refurbishing of transformer, BHEL's responsibility will be limited to providing the successful bidder, technical specification, approved repair procedure, approved quality plan and vendor list, manufacturing drawings/documents only in 'pdf' format for the portion related to repair. No other design calculation, software, computer outputs etc will be provided.

- The bidders are expected to visit the site and assess the condition of transformer by themselves. BHEL will not provide any logistic support or any other document at this stage except for Annexure-F & G.

- Based on the details provided by BHEL under Annexure- F & G, the bidders are required to work out their cost of repair of the Transformer inclusive of all required material, labour, overheads, testing after repair etc for the complete activity starting from accepting of Transformer for repair at works, dismantling, internal inspection, investigative LV tests till its successful dispatch after repair.

- Along with qualifying criteria, evaluation of bidders will be done based on total cost to BHEL including Taxes and Duties mentioned in the bid.

- The Transformer then shall be brought to the works by the vendor themselves. Vendor will have to arrange for its dismantling and detailed internal inspection including Investigative LV tests etc to be witnessed by BHEL and/or Customer representatives, to enable preparation of Repair procedure and its approval.

- The final repair will be in accordance with such approved repair procedure and BHEL would confirm the final repair cost based on rates already quoted by the bidder.

ANNEXURE- E

COMMERCIAL TERMS AND CONDITIONS

Important: ***This format is to be submitted, along with Part-I bid, duly signed by bidder, as proof of acceptance. Any Deviation from T&C mentioned below is NOT acceptable. A "No-deviation Certificate" as per enclosed Proforma of Annexure-K shall be submitted. Offers received without this acceptance, will be treated as non-responsive liableto be rejeced.***

Sl. No.	Terms & Conditions	Vendor's Remarks (Yes/No)
1.	The Offer should be exactly in accordance with the technical specification attached with this enquiry. No deviation is acceptable.	
2.	**Quality Assurance Plan :** Customer/BHEL approved Quality Plan applicable for the contract will be provided to the successful bidder	
3.	**Material and Component Vendor List :** Customer/BHEL approved Vendor List applicable for the contract will be provided to the successful bidder	
4.	**Inspection :** All stage and final inspection will be carried out by BHEL or their authorized representative and/or Customer. Vendor has to raise inspection call with min 7 days advance notice. No work should proceed further without inspection or specific waiver of inspection by BHEL. BHEL reserves the right to carry out Quality audit at works of vendor.	
5.	**Manufacturer's Name, their trade mark and brand,** if any should invariably be mentioned in the quotation and illustrating leaflets giving technical particulars etc. attached to the quotation	
6.	**Material** should be of **best quality and meet our specification and drawings** mentioned in enquiry. No deviation is acceptable.	
7.	**PRICE:**	
7a.	Prices shall be quoted on **Ex-works** basis and in Indian Rupees only. The credit towards scrap of old items/parts will have to be shown separately.	
7b.	**Freight :** Transportation of damaged transformer to works and its re-despatch to site after repair (as the case may be) shall be arranged by vendor. Freight charges will have to be separately indicated in price schedule of Part-2 bid.	
7c.	**Transit Insurance :** Transit Insurance of damaged transformer to works and its re-despatch to site after repair (as the case may be) shall be arranged by vendor. Transit Insurance charges will have to be separately indicated in price schedule of Part-2 bid.	
7d.	All the Prices shall remain **FIRM** till execution of the contract.	
7e.	**Safe Custody** : The party shall take out adequate Insurance policy (with BHEL as joint beneficiary) for safe custody of the BHEL make Transformers received at their works at all times till final dispatch to site.	
8.	**Payment Terms :**	
8a.	**Supply Payment:**	
	i. 80% of main equipment repair cost along with full taxes & duties + full Freight and Transit Insurance charges, within 90 days of receipt and	

		acceptance of Repaired Transformer at respective sites.	
	ii.	20% of main equipment repair cost after successful commissioning of repaired transformer at site. (subject to production of successful commissioning certificate from BHEL).	
8b.	**Commissioning Payment: (if applicable)**		
	i.	100% along with taxes & duties, after successful commissioning at site. (subject to production of successful commissioning certificate from BHEL).	
8c.	**Other Services: (if applicable)**		
	i.	100% along with taxes & duties, after completion of activity. (subject to production of successful completion certificate from BHEL).	
8d.	**Taxes/Duties: (if applicable)**		
	i.	Nature of Taxes/Duties as declared in price bid only will be paid. The payment of Taxes/Duties as per above and as per rates applicable on scheduled date of dispatch or actual date of dispatch, whichever is lower will be reimbursed against documentary evidence. No other Taxes/Duties will be paid by BHEL.	
8e.	**Mode of payment :** Direct through EFT		
8f.	**Documents for 80% payment :** Party's Invoice, Excise Duty gate pass, Sales tax payment certificate, Dispatch clearance by BHEL, Final test report, Original RR/Consignee copy of LR, Packing list, Guarantee certificate, Material receipt certificate from BHEL and documentary proof for other Taxes/Duties		
8g.	**No "Advance Payment" Term** will be accepted		
9.	**Delivery Terms:**		
9a.	**Delivery Schedule:** The maximum allowed time for delivery of repaired transformer at site shall be 120 days from date of LOI. The effective date of contract shall be the date of LOI.		
9b.	**Liquidated Damages for delay in delivery:** Liquidated Damages shall be levied @ 0.5% (Half percent) per week subject to a maximum of 10% of the total contract value. Delivery shall be guaranteed by acceptance of Liquidated Damages.		
9c.	**Part shipment**: Part shipment of material is not permissible.		
9d.	**Short Shipment**: In case of any short shipment in the main equipment/spares, where separates rates are not available in the contract, all taxes and duties levied on such supplies, if any shall be borne by the supplier.		
10.	**Import License:** No Import License will be given in any case (including warranty replacements). Only offer for Indigenous manufactured or of Imported Stock will be considered. Customs clearance and duty payments, if any, shall be to the account of vendor only.		
11.	**Enhancement Rates:** No enhancement of rate for whatever cause will be allowed once the quotation is accepted and the order is placed. Withdrawal from the quotation after it is accepted or failure to make the supply within the scheduled period will entail cancellation of the order in addition to recovery of losses from the successful bidder.		

12.	**Earnest Money Deposit :**	
12a	The earnest money is to be paid by each tenderer to ensure that the tenderer doesnot refuse to execute the work after it is awarded to him. The rate of earnest money deposit shall be as under. a) Works costing upto Rs. 2 Lakhs : Nil b) Works costing more than Rs.2 Lakh and up to Rs. 5 Lakh : Rs 10,000/- c) Works costing more than Rs.5 Lakhs and up to Rs.10 Lakhs : Rs.20,000/- d) Works costing more than Rs.10 Lakhs and up to Rs.20 Lakhs : Rs.40,000/- e) Works costing more than Rs.20 Lakhs and up to Rs.30 Lakhs : Rs.60,000/- f) Works costing more than Rs.30 Lakhs and up to Rs.50 Lakhs : Rs.1,00,000/- g) Works costing more than Rs.50 Lakhs and up to Rs.100 Lakhs : Rs.1,50,000/- h) Works costing more than Rs. 100 Lakhs : Rs.2,00,000/- The bidder can also opt for submission of one time EMD of Rs. 2,00,000/- which will qualify him to participate in all other tenders. EMD is to be collected in cash (as permissible under Income Tax act), Pay Order or Demand Draft only. EMD of the successful Tenderer shall be forfeited if i) After opening of the tender, the Tenderer revokes his tender within the validity period or increases his earlier quoted rates. ii) The Tenderer does not commence the work within the period as per LOI/Contract. EMD given by all unsuccessful tenderer shall be refunded normally within one month after award of work to the successful bidder. EMD shall not carry any interest.	
13.	**Security Deposit** :	
13a.	The tenderer, who will be awarded work, has to deposit Security Deposit before start of the work. The rate of Security Deposit will be as below: a) Up to Rs.10 lakhs: 10%. b) Above Rs.10 lakhs upto Rs.50 lakhs: 1 lakh + 7.5% of the amount exceeding Rs. 10 lakhs. c) Above Rs.50 lakhs: Rs 4 lakhs + 5% of the amount exceeding Rs. 50 lakhs. Security deposit may be furnished in any one of the following forms: i) Cash (as permissible under the Income Tax act) ii) Pay Order, demand Draft in favour of BHEL iii) Local cheques of Schedules Banks, subject to realization iv) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras, etc. (Certificates should be held in the name of the Contractor furnishing the security and duly pledged in favour of BHEL and discharged at the back). v) Bank Guarantee in BHEL Format from Scheduled Banks / Public Financial Institutions as defined in the Companies Act subject to a maximum of 50% of the total security deposit value. The balance 50% has to be remitted either by cash or in other form of security. vi) Fixed Deposit Receipt issued by Scheduled Banks /Public Financial Institutions as defined in the Companies Act. The FDR should be in the	

	name of the contractor, A/c BHEL, duly discharged on the back. vii) Security Deposit can also be recovered at the rate of 10% from the running bills. However, in such cases at least 50% of the security Deposit should have been deposited before the start of the work and the balance 50% may be recovered from the running bills. viii) EMD of the successful tenderer shall be converted and adjusted against the security Deposit ix) The Security deposit shall not carry any interest. **Note**: Acceptance of Security Deposit against Sl. no. (iv) and (vi) above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith. Security shall be refunded after the expiry of the warranty period/ defects liability period as applicable.	
14.	**Bank Guarantee :**	
14a.	**Bank Guarantee for providing Transformer to vendor:** The successful vendor will be taking possession of the BHEL make Transformer at its works for necessary repairs. For this purpose, the successful vendor will have to submit a Bank Guarantee (as per proforma to be given by BHEL) for 100% value of the Transformer valid till Delivery of the equipment and satisfactory execution of the supply contract in accordance with the terms and conditions of PO. The value of bank guarantee for present tender will be Rs 6,16,00,000 (Six Crores and Sixty Lakhs only).	
15.	**GUARANTEE:**	
15a	**Guarantee Period**: The repaired transformers shall be guaranteed for minimum **12 months** from the date of successful commissioning or **18 months** from the date of dispatch, whichever is earlier. The guarantee will be limited to the scope of work of the contract.	
15b	**Guarantee Replacements**: Any Guarantee replacement during guarantee period shall be provided on FOR Destination basis up to respective sites of BHEL Bhopal.	
15c	**Latent Defect :** Upon expiry of Guarantee period the liability of vendor shall cease except for Latent defect guarantee which shall be valid for a period of 2 (two) years commencing immediately after expiry of Guarantee period. The Latent defects are those defects which would have remained in the Transformer (owing to design, workmanship, process, material etc) but did not surface during the normal guarantee period.	
15d	**Technical Guarantees and Liquidated damages for Non-performance :** Technical guarantee parameters against each tender for Repair will be provided. In case of Deviation from those parameters, it will be the sole discretion of BHEL and/or Customer to either reject at risk and cost of vendor or accept the equipment after levy of Liquidated damages for non-performance. Rates for levy of Liquidated damages for non-performance will be informed by BHEL with each tender. A sample copy of Technical guarantee parameters is enclosed herewith at Annexure-F.	
16.	**Subletting of order :**	

	In case further subcontracting of BHEL order or part thereof is envisaged by supplier, the details of subcontracting and to whom to be subcontracted shall be furnished to BHEL and written permission shall be obtained from BHEL. However it shall not absolve the supplier of the responsibility of fulfilling BHEL order requirements	
17.	Bharat Heavy Electricals Ltd. does not bind itself to accept the lowest or any quotation, but reserves to itself the right to accept full or part of any quotation, cancel the tender at its discretion.	
18.	**Validity :** Rate should be quoted in the Units given in the Enquiry and valid for a period of three months from the due date of opening of quotation. The rates should be quoted both in figures and words. If required, BHEL may seek extension of validity of the offer. The bidders willing to extend the validity will have to do it without any change in quoted prices, terms & conditions etc.	
19.	The quotation must indicate **Tariff item** number and rate of Excise duty applicable: Original Excise duty **Gate pass** will be required to be furnished in case charged to us.	
20.	**Only Central Sales Tax** as applicable at the time of supply is to be charged Our registration No. is Bhopal-1/HEL-11 (C) dated 28-01-1982. However if any tenderer finds that any other sales tax is to be paid, it should clearly be mentioned in the quotation.	
21.	Where there is provision for payment of Sales Tax extra, if will only be paid if registration number both under the State Sales Tax and Central Sales Tax are specifically mentioned on the bill / invoice.	
22.	**Supplier Sales Tax Registration Number** should be mentioned in the quotation positively.	
23.	**Supplies shall be securely protected** and the goods packed against loss, damage etc. Marking and consignee details shall be as per the Purchase Order / as per standards.	
24.	**In case of dispatch by the vendor,** all Material is to be booked to the consignee with address of site, as given in enquiry sheet in case of Rail. In case of Road, the material is to be sent on Door Delivery basis to consignee. If any material is not booked as above, any wharfage or demurrage occurring thereof shall be to the account of the supplier.	
25.	**ARBITRATION**: In all case of disputes emanating from and in reference to this Purchase Order the matter shall be referred to the arbitration of the sole arbitration of the Executive Director/GM of BHEL, Bhopal or any other person (including an employee of BHEL, even though he had to deal with the matter relating to this P.O. in any manner) nominated by the said Executive Director/GM to act as sole arbitrator. The arbitration shall be under 'THE ARBITRATION AND CONCILIATION ACT OF 1996' and the rules there under. The arbitrator may from time to time with the consent of the parties enlarge the time for making and publishing the award.	
26.	**All suit / claims** in respect of this shall be in the Courts of Bhopal only.	
27.	BHEL also reserve its right to allow to the Public Sector Enterprises ordering and price preference facilities as admissible under the existing policy.	
28.	**SAFETY CLAUSE FOR PURCHASE ORDERS:**	
	i. The vendors shall maintain and ensure sufficient safety measures as required for inspections and tests like HV test Pneumatic test, Hydraulic	

		Test. Spring test. Bend test Material handling and safe working environment etc. to enable Inspection Agency for performing inspection.	
	ii.	The vendor shall ensure that all the safety precautions specified in Factories Act 1948 Chapter-IV Section-21 to 41 are complied with respect to equipment is found not complying with proper safety requirements, then the Inspection agency may with hold inspection, till such the desired safety requirements are met.	
29.	Evaluation of offer shall be on the basis of total cost to BHEL including taxes and duties (including splitting of order if required)		

Signature of vendor with date & seal

ANNEXURE-F

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GEN.TRANSFORMERS			
TECHNICAL DATA SHEET: BHEL DOC.NO: BP-DG-245-301-018 Rev.01			
EQUIPMENT: 207 MVA, 21/400/√3 KV 1-PH GEN.TRANSFORMER.			
SL. NO	**DESCRIPTION**	**UNIT**	**DETAIL**
1.0	Transformer applications		Generator Transformer.
2.0	Type & Make		Outdoor, Single Phase, BHEL Make
3.0	Applicable standard (Rev. as applicable on date of offer)		IS: 2026
4.0	Quantity		4
5.0	Full load rating	MVA	207
6.0	Rating of each windings	MVA	HV : 207, LV = 207
7.0	Rated No load voltage LV/HV	kV/kV	21/400/√3
8.0	Rating of different cooling methods		
	a. ONAN	% / MVA	60 / 124.2
	b. ONAF	% / MVA	80 / 165.6
	c. OFAF/ODAF	% / MVA	100 / 207.0
9.0	Impedance value	%	15
10.0	Rated frequency	Hz	50
11.0	Winding connection of different windings and Vector group		YNd1 (After 3 –phase bank formation
12.0	System earthing		
	a. HV		Solid
	b. LV		Effectively
13.0	Type of tap changer off circuit/ On load		Off circuit Tap Switch
14.0	Full load power tapping provided		Yes
15.0	Type of voltage variation (CFVV/VFVV/CbVV)		CFVV
16.0	Overfluxing capability		
	a. 110 %		Continuous
	b. 125 %		1 minute
	c. 140 %		5 Secs.

R01 REVISED IN LINE WITH CUSTOMER COMMENTS

Ppd by :	Chd by :
Date :25.08.06	Date: 25.08.06

30 R1

APGENCO

GEN.TRANSFORMERS

TECHNICAL DATA SHEET : BHEL DOC.NO: BP-DG-245-301-018 Rev.00

EQUIPMENT: 207 MVA, 21/400/√3 KV 1-PH GEN.TRANSFORMER.

SL.NO	DESCRIPTION	UNIT	DETAIL
17.0	Winding insulation type (Uniformly or Non Uniformly insulated)		
17.1	HV		Non uniform
17.2	LV		Uniform
18.0	Impulse withstand voltage of winding		
	a. HV	kVp	1425 (FW)/1570(CW)/1180 (S.I.)
	b. LV	kVp	125
19.0	Power frequency withstand voltage of winding HV/LV/HV neutral		21/400/√3
	a. HV	kVrms	510 (5secs) /460 (1 hr) with P.D
	b. LV	kVrms	50
	c. HVN	kVrms	38
20.0	Maximum temperature rise at full load with 100% coolers		
	(a) Oil	°C	35
	(b) Winding	° C	40
21.0	Bushing Particulars		
21.1	Applicable standard for bushing		IS-2099
21.2	Clearance in air HV/LV/Neutral	mm	
	a. HV (Phase to E)	mm	3500
	b. LV (Phase -phase & phase to E)	mm	330/ 230
	c. HVN (Phase to earth)	mm	320
21.3	Quantity of oil in oil filled bushing	Litres	170 (HV Bushing)
21.4	Creepage distance	mm/kV	25
22.0	No load loss	kW	110 Firm
23.0	Load Loss	kW	370 Firm
24.0	Cooler loss	kW	32 Firm
25.0	Efficiency at		
	a. Full Load	%	99.77 App.
	b..75 % Load	%	99.79 App.
26.0	No load current	A	10 App. ref to HV
27.0	Total estimated weight	kg	288300 App.
28.0	~~OLTC~~/ Off circuit tap switch		
28.1	Make		BHEL
28.2	Rated Voltage	Volts	60,000
28.3	Rated current	Amps	1200

Ppd by :	Chd by :
Date :25.08.06	Date: 25.08.06

APGENCO	Page 3 of 3
GEN.TRANSFORMERS	
TECHNICAL DATA SHEET : BHEL DOC.NO: BP-DG-243-301-018 Rev.00	
EQUIPMENT: 207 MVA, 21/400/√3 KV 1-PH GEN.TRANSFORMER.	

SL. NO	DESCRIPTION	UNIT	DETAIL
28.4	No. of steps		8 steps (9 positions)
28.5	Step voltage	Volts	5774
28.6	Time of operation from one step to another for Auto/ manual mode	Secs	N.A
29.0	Type of axial & radial coil supports for HV/LV		Paper, Pressboard, Udel wood
30.0	No. of cooler banks & capacity of each cooler bank		2 x 100%
31.0	Guaranteed No load current When excited from LV side at 100% and 110 % rated voltage	Amps	100 % - 80 110% - 170
32.0	Max. flux density when rated and 110% rated voltage	Wb/m^2	1.9
33.0	Vacuum withstand capability main tank, radiators and accessories	mm of Hg	Full vacuum (Except conservator)
34.0	Weight		
34.1	Core	Kg	116500 App.
34.2	Net copper wt HV/LV	Kg	15500 App.
34.3	Oil	Kg	58300 App.
34.4	Tank, Radiators & Fittings	Kg	98000 App.
34.5	Total	Kg	288300 App.
34.6	Untanking weight	Kg	15000 App.
35.0	Cooling fans, oil pumps rating	kW	Fans= 1.3 each Pumps = 2.8 each
36.0	Capability of transformer to remain in operation from hot condition after failure of forced cooling with full load	Min.	10
37.0	Core insulation level	kV	10

Ppd by :	Chd by :
Date :25.08.06	Date: 25.08.06

ANNEXURE-G

Data for repair of Transformer per phase

SL NO	DESCRIPTION OF ITEMS				
01	**Copper type**	**Ordinary PICC (proof Stress)**	**Proof Stress Bunched PICC**	**Proof Stress Glued Bunched PICC**	**Proof Stress Glued CTC**
02	Weight (Kg)	-	-	8221	7995
03	Finished insulation weight (Pre-compressed press board for winding)	LV	HV	TAP	
		320 Kg	390 Kg	152 Kg	
04	Winding Type	Double layer Helical	Partially Interleaved Disc	Inter wound helical	
05	Moulded Component with winding	NO	Yes	Yes	
06	SRBP Cylinder	Yes, 10mm thick, Height 2300mm Approx.	No	No	
07	Inter winding press board and spacers, top and bottom pressboard rings, press board block washer assembly (Pre-compressed press board) Finished weight (Kg)	3030 Kg			
08	Terminal gear (TG) Copper flats- Weight (Kg)	360			
09	Terminal gear (TG) Multistrand Copper cable- Weight (Kg)	100			
10	Aluminum tube (Kg)	20			
11	Epoxy edge block (Kg)	210			
Other items/fittings					
01	Current transformers (No & parameter)	See attachment for details			
02	Bushings type and rating	HV: 420KV, 1250 A, OIP Condenser Bushing HVN: 36KV, 12500 A, Porcelain Bushing LV: 36KV, 2000 A, Porcelain Bushing			
03	OLTC Type and rating	MFI-1200-60/C-10091W			
04	Yoke shunts (Kg)	1582			
05	Wall shunts (Kg)	1424			
06	Core lamination (Grade,	27 ZDKH90, 0.27, 121800 Kg(Net)			

	thickness and weight)	
07	Mild Steel (Kg) for repair of tank/ pipe work /accessories	Tank & Turrets: 22730 Pipe Work: 7240 Accessories: 680 Conservator: 1410 Radiator: 34145
08	Gaskets for tank rim, turrets, inspection covers, bushing flanges	1 set
09	Misc. items like valves/fittings(Kg)	Valves: 500 Fittings: 3350
10	Matching paint on tank and accessories repaired	Shade 631 of IS:5

ATTACHMENT TO ANNEXURE-G

CURRENT TRANSFORMER DETAILS

NOMEN-CLATURE	RATIO & TERMINAL MARKING	ACC. CLASS	BURDEN VA/Ω	KNEE POINT VOLTAGE MIN. (VOLT)	MAGNETISING CURRENT(MAX) AT $V_k/2$	SECONDARY RESISTANCE (MAX) OHMS	PURPOSE
1CT1.1	1000/5 1S1-1S2	PS	–	600 V	110 mA	1.0	GT DIFF. PROT.
–	–	–	–	–	–	–	–
1CT1N	1000/1 1S1-1S2	5P20	15	–	–	–	GT BACKUP PROT.
2CT1N	1000/1 2S1-2S2	PS	–	1000V	25 mA AT V_k	5.0	GT,HV&OH LINE DIFF. PROT.
1CT2.1	12500/5 1S1-1S2	PS	–	2400 V	25 mA AT V_k	8.0	GT DIFF. PROT.
–	–	–	–	–	–	–	–
1CT2.2	12500/5 1S1-1S2	PS	–	2400V	25 mA AT V_k	8.0	GT DIFF. PROT.
–	–	–	–	–	–	–	–
WCT1.1	996/3.7-3.2-2.7 S1-S2-S3-S4	5	1.6Ω	–	–	–	WTI+RTD (HV)
WCT2.1	10000/5 S1-S2	5	30VA	–	–	–	WTI+RTD (LV)
WAUX CT	5/2.7-2.1-1.5 S1-S2-S3-S4	5	1.6Ω	-	-	-	AUX. CT FOR LV WTI (M. KIOSK)

24-11-10.

ANNEXURE-H1

Tests to be performed on transformer when repaired as per Scope of Work of Option-1

SL. NO	TEST DESCRIPTION	ACCEPTANCE VALUE
01	All routine tests like ratio, resistance, magnetic balance, Magnetising current, polarity, vector group, insulation resistance etc.	Should be comparable with original test value
02	Capacitance and tan delta measurement	-------do---------
03	Separate source voltage withstand test	Should pass 30.4 KV rms for HV and 40 KV rms for LV
04	Measurement of no load loss and currents at 90%,100% and 110% of nominal voltage	Should be comparable with original test value. At 100% loss=110KW
05	Lightning and switching impulse tests (as applicable)	Should pass the specified value, 1140/944(LI/SI) and chopped wave 1256kvp
06	Induced over voltage test with partial discharge measurement (as applicable)	Should pass the specified value, 460/510 KV rms as per IS 2026
07	Measurement of load loss and impedance voltage	Should be comparable with original test value, 370 KW and 15 ±10% at 207 MVA
08	Operational test on OLTC/Off circuit tap changer	As per IS-2026
09	Isolation test between core, core clamping structure and tank(earth)	Should pass the specified value (2KV)
10	FRA test	Yes

ANNEXURE-H2

Tests to be performed on transformer when repaired as per Scope of Work of Option-2

SL. NO	TEST DESCRIPTION	ACCEPTANCE VALUE
01	All routine tests like ratio, resistance, magnetic balance, Magnetising current, polarity, vector group, insulation resistance etc.	Should be comparable with original test value
02	Capacitance and tan delta measurement	-------do---------
03	Separate source voltage withstand test	Should pass 38 KV rms for HV and 50 KV rms for LV
04	Measurement of no load loss and currents at 90%,100% and 110% of nominal voltage	Should be comparable with original test value, At100% loss=110KW
05	Lightning and switching impulse tests (as applicable)	Should pass the specified value, 1425/1180(LI/SI) and chopped wave 1570 KVp
06	Induced over voltage test with partial discharge measurement (as applicable)	Should pass the specified value, 460/510 KV rms as per IS 2026
07	Measurement of load loss and impedance voltage	Should be comparable with original test value, 370 KW and 15 ±10% at 207 MVA
08	Operational test on OLTC/Off circuit tap changer	As per IS-2026
09	Isolation test between core, core clamping structure and tank(earth)	Should pass the specified value (2 KV)
10	FRA test	Yes

ANNEXURE-I

PRICE-BID FORMAT FOR REPAIR OF TRANSFORMER AS PER SCOPE OF WORK OF OPTION-1

(Repair of transformer using existing windings)

Sl No	Description of work	Qty	Unit Price in INR	Total price in INR
1)	- Dismantling at site, blanking of openings and making ready for loading			
2).	- Loading on Trailer and transportation to works (N2 filled)			
3).	- Dispatch of accessories required for testing of GT after repairs, to works			
4).	- Transit insurance for transportation to works			
5).	- Unloading at works and making ready for inspection			
6).	- Opening and Dismantling at works for internal inspection, LV tests			
7).	- Repair of Bottom Tank without removing the active part assembly			
8).	- Replacement with new Top Tank fitted with wall shunts			
9).	- Replacement with new HV line lead with Aluminum tube			
10)	- Replacement with new HV Turret and Bushing CTs			
11)	- Repair/replacement of Tap-changer selector and diverter			
12)	- Replacement with new HV, LV and Tapping Terminal Gear assembly including cleats			
13)	- Replacement with new HV,LV and Neutral bushing			
14)	- Replacement of 17.5 KV core isolation bushing			
15)	- Replacement of all sealing gaskets			
16)	- VPD processing of re-assembled Transformer			
17)	- Servicing of other reused items/parts			
18)	- Oil filling, circulation and making ready for testing			
19)	- Testing of Transformer as per testing procedure listed separately in enclosed Annexure-H1			
20)	- Draining of Oil, Dismantling and making ready for dispatch			
21)	- Repainting of complete Transformer			
22)	- Loading on Trailer and transportation to site (N2 filled)			
23)	- Dispatch of balance accessories to site including fresh set of erection gaskets			

24)	- Transit insurance for transportation to site			
25)	- Re-erection, testing and commissioning at site			
	COST OF REPAIR OF TRANSFORMER AS PER SCOPE OF WORK OF OPTION-1			

LESS CREDIT TOWARDS SCRAP OF OLD ITEMS/PARTS

Sl No	Material Description	Qty	Unit Price in INR	Total price in INR
1)				
2).				
3).	**CREDIT TOWARDS SCRAP OF OLD ITEMS/PARTS**			

TOTAL COST OF REPAIR OF TRANSFORMER LESS CREDIT TOWARDS SCRAP OF OLD ITEMS/PARTS	

Signature of vendor with date & seal

ANNEXURE-J

PRICE-BID FORMAT FOR REPAIR OF TRANSFORMER AS PER SCOPE OF WORK OF OPTION-2

(Repair of transformer with replacement of windings, terminal gear and associated insulation also)

Sl No	Description of work	Qty	Unit Price in INR	Total price in INR
1)	- Dismantling at site, blanking of openings and making ready for loading			
2)	- Loading on Trailer and transportation to works (N2 filled)			
3)	- Dispatch of accessories required for testing of GT after repairs, to works			
4)	- Transit insurance for transportation to works			
5)	- Unloading at works and making ready for inspection			
6)	- Opening and Dismantling at works for internal inspection, LV tests			
7)	- Repair of Bottom tank without removing the active part assembly			
8)	- Unlacing, removal of old winding assembly, Cleaning of core			
9)	- Manufacturing of new winding assembly with terminal gear and associated insulation			
10)	- Assembly of new winding and existing core and re-lacing			
11)	- Replacement with new Top tank fitted with wall shunts			
12)	- Replacement with new HV line lead with Aluminum tube			
13)	- Replacement with new HV Turret and Bushing CTs			
14)	- Replacement with new HV, LV and Tapping Terminal Gear assembly including cleats			
15)	- Replacement of damaged Tap-changer assembly selector and diverter			
16)	- Replacement with new HV,LV and Neutral bushing			
17)	- Replacement of 17.5 KV core isolation bushing			
18)	- Replacement of complete insulation material between bottom tank and bottom yoke			
19)	- Replacement of all sealing gaskets			
20)	- VPD processing of re-assembled Transformer			
21)	- Servicing of other reused items/parts			
22)	- Oil filling, circulation and making ready for testing			
23)	- Testing of Transformer as per testing procedure separately enclosed at Annexure-H2			
24)	- Draining of Oil, Dismantling and making ready for dispatch			
25)	- Repainting of complete Transformer			
26)	- Loading on Trailer and transportation to site (N2 filled)			

27)	- Dispatch of balance accessories to site including fresh set of erection gaskets			
28)	- Transit insurance for transportation to site			
29)	- Re-erection, testing and commissioning at site			
	COST OF REPAIR OF TRANSFORMER AS PER SCOPE OF WORK OF OPTION-2			

LESS CREDIT TOWARDS SCRAP OF OLD ITEMS/PARTS

Sl No	**Material Description**	**Qty**	**Unit Price in INR**	**Total price in INR**
	CREDIT TOWARDS SCRAP OF OLD ITEMS/PARTS			

	TOTAL COST OF REPAIR OF TRANSFORMER LESS CREDIT TOWARDS SCRAP OF OLD ITEMS/PARTS	

Signature of vendor with date & seal

ANNEXURE K

FORMAT FOR
"NO DEVIATION CERTIFICATE"

Tender Enquiry No: …….., **dated --/--/----**

NO DEVIATION CERTIFICATE

This is to certify that our offer is exactly in line with your tender enquiry no. **……..**, **dated --/--/----.** This is to expressly certify that our offer contains **no deviation** either Technical or Commercial in either direct or indirect form.

Signed By:

Name: _____

Designation: _____

Organization: _____

Date & Place: _____

Phone/Fax/Mobile/Email: _____

Stamp & Seal: _____

Place:
Date: