



BHARAT HEAVY ELECTRICALS LTD.
 (A GOVT. OF INDIA UNDERTAKING)
 P.O BHEL Jhansi - 284129, INDIA
 Tel.:0510-277001/2412260 Fax: 2412120
 Email : mmx@bheljhs.co.in

JSC140/M2053

PURCHASE ENQUIRY

ENQ NO/DT: E4641457/06-10-14
 REV NO/DT: 0 /06-10-14

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PLEASE SEND YOUR BEST QUOTATION AS PER TERMS & CONDITIONS PREPRINTED OVERLEAF AND/OR ATTACHED AND REMARK PRINTED UNDERNEATH.

Enqr Due on: 31-10-14 FRIDAY
 Close at: 13:15 Open at: 14:00
 Matcat: 461998 ON LINE DISSOLVED GA
 Validity: 120 days from Technical bid opening date

REQUIRED: TEST CERT/ GUARANTEE CERT

IEM:
 TOP: See Special Remarks
 RA: BHEL reserves the right to conduct RA
 Eval: Item wise

Bid Type: TWO BID
 Tot Item: 2
 Delivery: FOR Jhansi
 E-Proc: No

ITEM NO : 1
 MATL CODE : TR171158A610
 DESTINATION: JS

PSL QTY/UM: 7.00 NO
 PO QTY /UM:

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
ON LINE DISSOLVED GAS MONITORING SYSTEM AS PER ATTACHED ANNEXURE.	OCT-14	2.00
	NOV-14	2.00
	DEC-14	2.00
	JAN-15	1.00

ITEM NO : 2
 MATL CODE : TR171158A619
 DESTINATION: JS

PSL QTY/UM: 7.00 NO
 PO QTY /UM:

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
INSTALLATION MATERIAL AND COMMISSIONING FOR ON LINE DISSOLVED GAS MONITIRING SYSTEM.	OCT-14	2.00
	NOV-14	2.00
	DEC-14	2.00
	JAN-15	1.00

SPECIAL REMARKS:

OUR CONTACT DETAILS ARE AS UNDER
 DIRECT FAX NO IS 0510-2412120 / 2770161.
 PHONE NO. 0510-2412435 / 2412737
 E-MAIL : bkmanjhi@bheljhs.co.in and sumit@bheljhs.co.in

ENQUIRY REMARKS:-

- 1- VENDOR TO SUBMIT OFFERS IN TWO BID. OFFERS RECEIVED IN SINGLE BID MAY NOT BE CONSIDERED. VENDOR ARE REQUESTED KINDLY FURNISH CLAUSE WISE ACCEPTANCE AGAINST ENCLOSED MANDATORY SHEET AS PER ATTACHED ANNEXURE NO. A. IF ANY VENDOR HAS NOT SUBMITTED MANDATORY SHEET IN ORIGINAL (DULY SIGNED BY THE BIDDER), ALONG WITH PART-I WILL BE TREATED AS NON- RESPONSIVE, AND SHALL BE LIABLE FOR REJECTION OF BID.
- 2- VENDOR HAS TO CONFIRM TO SUPPLY ITEM AS PER DESCRIPTION / TECHNICAL SPECIFICATION OF ENQUIRY (COMPLETE DESCRIPTION OF ITEM) IN TECHNO COMMERCIAL BID AS PER ATTACHED SPECIFICATION.
- 3- TEST CERTIFICATE / GUARANTEE CERTIFICATE AS SPECIFIED IN ENQUIRY HEADER WILL BE PROVIDED (ALONG WITH SUPPLY).
- 4- VENDOR HAS TO MENTION THEIR CONTACT NUMBER, NAME OF CONTACT PERSON, EMAIL ID AND FAX NUMBER, IN THEIR OFFER.
- 5- ALL THE TAXES AND DUTIES APPLICABLE ARE TO BE MENTIONED IN TECHNO-COMMERCIAL BID.
- 6- TENDER SHOULD BE SUBMITTED IN DOUBLE COVER UNDER TWO PART BID DEPICTED BELOW :-
- I- THE OUTER COVER SHOULD ONLY BEAR THE ADDRESS OF THIS OFFICE AND SHOULD NOT HAVE ANY INDICATION THAT A TENDER IS WITHIN:



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TO,

SR. DGM (MM)
MATERIAL MANAGEMENT DEPARTMENT
ADMINISTRATIVE BUILDING
P.O. - BHEL, JHANSI (UP)
PIN - 284129

II- THE TWO INNER COVERS SHALL CONTAIN THE TECHNO COMMERCIAL BID IN ONE AND THE PRICE BID IN ANOTHER. EACH COVER SHALL BE SUPER - SCRIBED WITH THE BIDDER'S NAME, ADDRESS, TENDER NUMBER AND DUE DATE ON THE RESPECTIVE COVERS AS SHOWN BELOW :-

TECHNO-COMMERCIAL BID COVER (PART- I)
TENDER NO. _____ DUE ON _____

TO,
SR. DGM (MM)
MATERIAL MANAGEMENT DEPARTMENT
ADMINISTRATIVE BUILDING
P.O. - BHEL, JHANSI (UP)
PIN - 284129

PRICE BID COVER (PART-I I)
TENDER NO. _____ DUE ON _____

TO,
SR. DGM (MM)
MATERIAL MANAGEMENT DEPARTMENT
ADMINISTRATIVE BUILDING
P.O. - BHEL, JHANSI (UP)
PIN - 284129

-
- III- THE TENDERS DULY FILLED IN AND COMPLETE IN ALL RESPECTS TO BE DROPPED IN THE TENDER BOX LOCATED AT CISF GATE OF OUR ADMINISTRATIVE BUILDING TILL 13.15 HRS ON THE TENDER OPENING DATE AS NOTED IN THE COVERING LETTER.
- IV- ALL THE "TECHNO COMMERCIAL BID" TENDER RECEIVED SHALL BE OPENED FROM 1400 HRS IN THE TENDER ROOM LOCATED IN ADMINISTRATIVE BUILDING ON THE TENDER OPENING DATE IN PRESENCE OF BIDDERS OR THEIR REPRESENTATIVES AS MAY BE PRESENT.
- V- BIDDERS ARE ADVISED TO NOTE & STRICTLY FOLLOW THE TIME SCHEDULES AS NOTED AT PRECEDING PARA'S ABOVE TO AVOID INCONVENIENCE LATER AND POSSIBILITY OF NON ACCEPTANCE OF TENDER BY BHEL.
- 7- OUTLINE AND MOUTING DETAIL DRAWINGS, DESCRIPTIVE LEAFLET CATALOGUE, TECHNICAL LITERATURE DESCRIBING WORKING PRINCIPLE OF THE MODEL S SHALL BE SUBMITTED ALONG WITH OFFER.
- 8- COMPLETE SCHEMETIC DRAWING, TERMINAL MARKING AND WIRING TERMINATION OF ALARM & TRIP CONTACT, TYPE AND SIZE OF TERMINALS SHALL BE SUBMITTED ALONG WITH OFFER.
- 9- CALIBRATING ARRANGEMENT, IF REQUIRED SHALL BE PROVIDED.
- 10- THE SUPPLIER SHALL FURNISH A LIST OF ALL FITTINGS AND COMPONENTS IN THE DISPATCH DETAILS GIVINGS DESCRIPTION AND QUANTITY OF EACH ITEM (QTY OF EACH ITEM SHALL BE MENTIONED). ALL ITEMS SHALL BE PROPERLY PACKED IN WOODEN BOXES TO AVOID ANY TRANSIT DAMAGES.
- 11- THE SETS OF INSPECTION, ROUTINE, ACCEPTANCE AND CALIBARATION TEST REPORT, OPERATION AND MAINTENANCE MANUAL, DESCRIPTIVE CATALOGUE/ LEAFLETS SHALL BE SENT ALONG DISPATCH DOCUMENTS. ONE SET SHALL BE SUPPLIED ALONG WITH THE EQUIPMENT.
- 12- VENDOR SHALL FOLLOW ENCLOSED QUALITY PLAN.
- 13- TYPE TEST CERTIFICATE (NOT OLDER THAN 05 YEARS) TO BE SUBMITTED ALONG WIYH SUPPLY.
- 14- VENDOR TO CONFIRM ALL THE CLAUSE OF THE ENQUIRY IN THEIR TECHNICAL



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- BID.
- 15- NON ACCEPTANCE OF ANY CLAUSES AS PER ENQUIRY WILL BE LOADED SUITABLY AS PER BHEL NORMS.
 - 16- QUALIFYING CRITERIA FOR THIS TENDER SHALL BE AS PER ENCLOSED ANNEXURE- B
 - 17- TECHNICAL DATA SHEET & DRAWINGS SHALL BE SUBMITTED IN SOFT (ADVANCE COPY) AS WELL AS IN HARD COPIES FOR OUR APPROVAL.
 - 18- INSPECTION SHALL BE DONE BY BHEL JHANSI / AUTHORIZED REPRESENTATIVE / END CUSTOMER AT SUPPLIER.
 - 19- VENDORS TO CONFIRM ALL THE GENERAL TERMS AND CONDITION OF THE ENQUIRY.
 - 20- ALL OTHER TERMS AND CONDITION UNLESS OTHERWISE SPECIFIED AND DIRECTED ARE AS PER GENERAL TERMS & CONDITION OF PURCHASE ENQUIRY.

THE QUOTATION MUST BE SEALED AND BE SENT IN DOUBLE ENVELOPE.
 THE INNER ENVELOPE SHOULD BEAR ENQUIRY NUMBER & DUE DATE AT THE TOP.

If you are not in a position to quote due to any reason, you must send regret letter titled enquiry no. etc, failing which you may not be considered for sending future enquiries.

ENCLOSERS:

FOR AND ON BEHALF OF
 BHARAT HEAVY ELECTRICALS LTD

B K MANJHI
 DY GENERAL MANAGER (MM)
 Email:-bkmanjhi@bheljhs.co.in

***** END OF PURCHASE ENQUIRY *****

NOTE :

- * SUPPLIERS ARE REQUESTED TO INFORM US WITH VALID CERTIFICATE, IF THEY ARE REGISTERED UNDER MSMED ACT'2006. (APPLICABLE FOR INDIAN SUPPLIERS ONLY).
- * FOR SUPPLIERS SUPPLYING FROM OUTSIDE THE LOCAL AREA OF BHEL JHANSI, ENTRY TAX WILL BE APPLICABLE. SUPPLIERS SHOULD NECESSARILY INDICATE RATE OF ENTRY TAX SEPARATELY WHEREVER APPLICABLE. THEY SHOULD ALSO MENTION THE ENTRY TAX CHARGED SEPARATELY IN THE INVOICE.
- * FOR SUPPLIERS SUPPLYING FROM OUTSIDE UP, IN CASE THE OFFER IS SILENT ON ENTRY TAX, IT SHALL BE LOADED SUITABLY WITH THE APPLICABLE RATES
- * IN CASE IF THERE IS ANY DIFFERENCE BETWEEN THE 'SPECIAL REMARKS/ANNEXURES' OF THE ENQUIRY AND THE PREPRINTED TERMS & CONDITIONS (REF JSC140/M2053), THE REQUIREMENT GIVEN IN REMARKS WILL PREVAIL.



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TERMS & CONDITIONS FOR PURCHASE ENQUIRY

1. Offer must be submitted in a sealed cover. The cover should bear our enquiry number, due date of opening and name of her bidder.
2. When offer is invited in two bids, outer cover, inner cover-I (Techno Commercial bid) and inner cover -II (Price-Bid) must bear our tender no., due date and bidders name.
3. The offer should reach this office on or before 13:15 hrs. on the due date. The tender can also be dropped in the Tender Box kept at Administrative Building Gate. The tenders will be opened after 14:00 hrs. on the due date in presence of all bidders who will be present.
4. Offer should be free from overwriting or erasures. Corrections or additions, If any should be attested.
5. No enhancement of rate for whatever cause in allowed once the offer is accepted and the order is placed. Withdrawal from the quotation after it is accepted or failure to make the supply within the schedule period will entall cancellation of order, forfeiture of earnest money if any and/or imposition of risk & cost purchase.
6. Material offered should be of required quality and conforming strictly to our specification/drawings or to the specifications in the drawings. Any deviation must be clearly stated in the offer with particular clause/detail in our specification/drawing for which deviation is quoted. All required documents/details e.g. QA Plan, type TCS, drawings and date sheet etc. must be submitted alongwith the offer.
7. Irrespective of whether it is mentioned in our specification, all machines/equipments are required to be calibrated in metric units and certificates "must be issued where applicable".
8. Work test certificates/Inspection certificates/guarantee certificate/compliance certificate, etc. will be required to be submitted along with supplies in case an order, is placed.
9. In case an order is placed, supplier shall be required to guarantee for smooth and satisfactory performance of the equipment for a period of 24 months from the date of dispatch or 18 months from the date of commissioning whichever is earlier and certificate must be issued to this effect. Necessary instruction booklets for operation and maintenance are to be sent with supply where applicable.
10. Sample must be submitted where specified so as to reach us on or before the due date of tender.
11. Required lead time for affecting supplies alongwith available capacity should be indicated in the offer.
12. Failure to supply by the time specified on the order will make the supplier liable to pay unconditional penalty of ½ of the prices of goods in arrear per week subject to a maximum of 10% of the order value unless agreed otherwise.
13. The quantities for each item to be purchased may vary from the tendered quantity according to our actual requirement at the time of placing orders.
14. Our standard terms of payment is 100% payment after 60 days of acceptance of material at our works. In no case, interest for over due period will be borne by BHEL. Advance or LC payment terms shall generally not be considered and offers received with other than our standard terms of payment can be bypassed (except SIDBI discounting facility will be accepted for suppliers to whom this facility has been granted).
15. Bharat Heavy Electricals Ltd. Does not bind itself to accept the lowest of any tender, but reserves to itself the right to accept or reject all or a part of any tender at its discretion following BHEL Purchase Policy & government guidelines.
16. In all cases of disputes, the matter shall be referred for arbitration. The arbitrator shall be nominated by the Unit Head, Bharat Heavy Electricals Ltd., Jhansi or any other officer nominated by him. The award of arvitratior shall be final and binding on both the parties.
17. In case of any suit or other legal proceedings under or relating to this tender, the courts at Jhansi shall have full, jurisdiction.
18. Total delivered cost at BHEL Jhansi Railway siding/Works shall be the criterion for deciding the tender.
19. Unless otherwise specified, offer should be on ex-works basis with freight & insurance to be borne by BHEL.
20. Your quotation against this enquiry must be valid for ordering upto minimum of 90 days from the date of tender opening.
21. **ADDITIONAL FOR INDIAN SUPPLIERS:**
 - i) If any material is booked to selves or if it is not consigned to BHEL Jhansi, any warfage or demurrage occurring from these shall be to the account of supplier. In case of road transport, material shall be booked only through our rate contract transporters mentioned in the purchase order.
 - ii) Where there is provision for payment of Sales Tax extra, it will be paid only if the registration number both under State Sales Tax and Central Sales Tax are specically mentioned on the bill/invoice. Your Sales Tax Registration number should be mentioned in the offer positively.
 - iii) Excise duty Gate Pass will be required in original. Applicable taxes & duties must be included in the offer.
22. **ADDITIONAL FOR FOREIGN SUPPLIER:**
 - i) For documentation and correspondence language shall be English only.
 - ii) Rates quoted should be on FOB basis. All dispatches are to be made by sea by IPBC conference vessels only unless otherwise stated in purchase order.
 - iii) Agncy commission, if any, will be paid out of the FOB value after receipt & acceptance of material at BHEL Jhansi in Indian Rupees. TT buying exchange rate prevailing on the tender opening date or the letter of credit date or date of purchase order whichever is lowest will be considered for calculating the agency commission.
 - iv) The rates quoted should be inclusive of charges of packing and delivery of material upto the port of shipment on FOB terms. The material is required to be packed suitably in all respects considering the peculiarity of the material for normal transport by Sea/air and subsequently by Rail/Road in India suitably protected against the effect of tropical salt laden atmosphere in the event of consignment being delayed at Indian Ports before outward clearance. You should also furnish details of shipping specification, sizes, volume, weight, number of cases etc. When articles are packed with packing material of plant origin, phytosanitary certificate will be required.
 - v) Our standard terms of payment is 100% payment through bank against dispatch documents or 100% through sight irrevocable & unconfirmed letter or credit.
23. Please also refer to our tender for any other terms and conditions.



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Mandatory sheet regarding instruction to bidders for compliance for Enquiry No- E4641457.

Important: This format is to be submitted in original, along with part-i of bid, duly signed by the bidder, as proof of acceptance.

Any deviation from the T & C mentioned below is NOT acceptable. Offers received without this acceptance, will be treated as non- responsive, and shall be liable for rejection

SL. NO.	DESCRIPTION	COMMENTS / CONFIRMATION BY VENDOR
1.	(A) WE CONFIRM THAT OUR OFFER MEETS IN TOTO ALL THE TECHNICAL REQUIREMENTS AS GIVEN IN THE ENQUIRY ITEM DESCRIPTION, TECHNICAL ANNEXURE & REMARKS OF THE TENDER.	ACCEPTED
	(B) TECHNICAL DEVIATIONS, IF ANY, ARE TO BE CLEARLY BROUGHT OUT IN OFFER ITSELF. (NOTE: OFFERS WITH TECHNICAL DEVIATIONS ARE LIABLE FOR REJECTION)	ACCEPTED
2.	(A) WE CONFIRM ACCEPTANCE OF ALL THE COMMERCIAL TERMS & CONDITIONS OF PURCHASE ENQUIRY.	ACCEPTED
	(B) COMMERCIAL DEVIATIONS, IF ANY, ARE TO BE SPECIFICALLY BROUGHT OUT IN OFFER ITSELF.	ACCEPTED
3.	TERMS OF PAYMENT:	
	(I) BHEL STANDARD TERMS OF PAYMENT: 90% PAYMENT OF SUPPLY VALUE SHALL BE MADE AFTER 60 DAYS FROM THE DATE OF ACCEPTANCE OF EQUIPMENT AT BHEL. BALANCE 10% OF SUPPLY VALUE PLUS 100% OF THE E&C PORTION WILL BE PAID AGAINST E&C CERTIFICATE ISSUED BY CUSTOMER /BHEL AND SUBMISSION OF PERFORMANCE BANK GUARRANTY OF 10% OF BASIC ORDER VALUE, VALID FOR 36 MONTH FROM COMMISSIONING DATE WITH FURTHER CLAIM PERIOD OF 03 MONTH. *THE BIDDERS, WHO ARE REGISTERED WITH BHEL UNDER MICRO & SMALL CATEGORIES (REFER MSMED ACT 2006) & QUOTED PAYMENT WITHIN 45 DAYS OF DRS, IF THERE IS NO OBJECTION WILL ALSO BE TREATED AT PAR WITH STANDARD TERMS OF PAYMENT.	ACCEPTED
	(II) ANY OTHER PAYMENT TERM LIKE: ADVANCE/LC/CAD (CASH AGAINST DISPATCH) ETC. WILL NOT BE ACCEPTED FROM INDIGENOUS VENDORS. OFFERS RECEIVED WITH THIS PAYMENT TERM SHALL BE REJECTED. LC PAYMENT TERM WILL BE ACCEPTED ONLY IN CASE OF FOREIGN SUPPLIER. BHEL WILL LOAD TOTAL OUTFLOW IN CASE OF ALTERNATE PAYMENT TERMS, AS FOLLOWS: <ul style="list-style-type: none"> FOR DOCUMENTS THROUGH BANK/COD (CASH ON DELIVERY I.E. AGAINST DRS): FOR 75 DAYS @ (BASE RATE OF SBI+6%) PER ANNUM IN CASE OF PAYMENT TERM" DOCUMENT THROUGH BANK" ALL BANK CHARGES SHALL BE IN SUPPLIER'S ACCOUNT. BASE RATE OF SBI SHALL BE TAKEN AS THE RATE APPLICABLE ON THE DATE OF 'TECHNO-COMMERCIAL BID' (PART I) OPENING DATE. BASE RATE OF SBI IS AVAILABLE AT SBI SITE. AT PRESENT BASE RATE OF SBI IS 10%. IN CASE WHERE THERE ARE DEFERRED PAYMENT TERMS I.E. PAYMENT IN MORE THAN ONE STAGE, LOADING SHALL BE DONE ON PRO-RATA BASIS ON THE DEFERRED AMOUNTS.	ACCEPTED

4.	PRICES SHALL REMAIN FIRM TILL EXECUTION OF THE CONTRACT	ACCEPTED
5.	DELIVER- i)- COMMENCEMENT OF SUPPLY IN DAYS FROM DATE OF PO ii)- E & C PERIOD IN DAYS-	----- DAYS ----- DAYS
6.	LIQUIDATED DAMAGE (L.D.): -SUPPLY- FAILURE TO SUPPLY BY THE TIME SPECIFIED ON THE ORDER WILL MAKE THE SUPPLIER LIABLE TO PAY UNCONDITIONAL PENALTY OF ½% THE PRICES OF GOODS IN ARREAR PER WEEK SUBJECT TO A MAXIMUM OF 10% OF THE ORDER VALUE. - E & C PORTION - AFTER RECEIPT OF SUPPLY, BHEL WILL INTIMATE IN ADVANCE. ANY DELAY IN COMPLETION OF WORK BEYOND THE PERIOD WOULD ENTAIL LD AS PER STANDARD LD CLAUSE. ANY DEVIATION FROM THE ABOVE LD CLAUSE , LOADING WILL BE APPLIED TO THE EXTANT TO WHICH IT IS NOT AGREED BY THE BIDDER (AT OFFERED VALUE).	ACCEPTED
7.	PLEASE SEND OFFER ON FOR BHEL JHANSI BASIS I.E. FREIGHT AND INSURANCE TO YOUR ACCOUNT. ELSE LOADING AS PER FAST MOVING RC RATE (RS. 21/KG) SHALL BE LOADED.	ACCEPTED
8.	REVERSE AUCTION- BHEL RESERVES THE RIGHT TO GO FOR REVERSE AUCTION INSTEAD OF OPENING THE SUBMITTED SEALED BID, WHICH WILL BE DECIDED AFTER TECHNICAL EVALUATION. INFORMATION AND GENERAL TERMS AND CONDITIONS GOVERNING RA ARE AS PER ENCLOSED ANNEXURE-II. PLEASE CONFIRM FOR YOU ACCEPTANCE OF RA.	ACCEPTED
9.	THE OFFER SHOULD REMAIN VALID UP TO 120 DAYS FROM THE TENDER OPENING DATE	ACCEPTED
10.	GUARANTEE CLAUSE: THE EQUIPMENT SHOULD BE GUARANTEED FOR THE PERIOD OF 42 MONTHS FROM DATE OF SUPPLY OR 36 MONTHS FROM COMMISSIONING WHICHEVER IS EARLIER.	ACCEPTED
11.	WARRANTY REPLACEMENT: ANY REPLACEMENT DURING WARRANTY PERIOD SHALL BE PROVIDED ON F.O.R BHEL JHANSI/ CUSTOMER SITE. CUSTOMS CLEARANCE AND DUTY PAYMENTS, IF ANY, F.O.R SUCH CASES SHALL BE TO THE ACCOUNT OF VENDOR ONLY.	ACCEPTED
12.	THE ABOVE TERMS AND CONDITIONS SHALL BE READ IN CONJUNCTION WITH BHEL'S STANDARD TERMS AND CONDITIONS OF ENQUIRY. WHEREVER DIFFERENCE IN TERMS AND CONDITIONS IS THERE, THE TERMS AND CONDITIONS MENTIONED IN THIS MANDATORY SHEET SHALL PREVAIL.	ACCEPTED
13..	RATES QUOTED FOR CABLE, CONDUIT ETC REQUIRED FOR INSTALLATION & COMMISSIONING ARE PER METER RATES. KINDLY GIVE CONFIRMATION FOR THIS	CONFIRMED
14.	TOTAL SCOPE OF INSTALLATION MATERIAL QUOTED SEPARATELY IF REQUIRED ALONG WITH EQUIPMENT. KINDLY GIVE CONFIRMATION SEPARATELY.	CONFIRMED
15.	PLEASE FURNISH SHIPPING DIMENSION & WEIGHT OF CONSIGNMENT IN YOUR OFFER.	CONFIRMED

NOTE- IN CASE OF ANY DISCREPANCY/DEVIATION IN TERMS & CONDITIONS ACCEPTED IN MANDATORY SHEET AND GIVEN IN THE OFFER, THEIR ACCEPTANCE GIVEN ON MANDATORY SHEET SHALL BE CONSIDERED.

SIGNATURE

NAME

COMPANY NAME



QUALITY ASSURANCE PLAN FOR CUSTOMER M/S GETCO

QUALITY ASSURANCE PLAN FOR RECTIFIER TRANSFORMER

MATERIAL INSPECTION / IN-PROCESS INSPECTION / FINAL INSPECTION

SUB VENDORS / VENDORS / CONTRACTORS WORKS

QP No QP/PT/1117
REV.No.00
DATE:18.07.2014
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W.O. NO.71158A17100, 7X100 MVA, 220/66 KV

BHEL/CQX/007/0006

Sl. No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
1	RAW MATERIAL											
1.1	Steel Plates (For Fabricated items)	a) Surface finish b) Thickness c) Chemical & Mechanical Properties	B B B	V I T	100 % 100 % One sample/lot	IS / PS	IS / PS	Supplier TC	P P P P	V V V V		
1.2	CRGO (CRGO Steel)	a) Specific loss b) Bend test c) Ageing test d) Surface Resistivity	B B B B	T T T T	Sample	IS / PS	IS / PS	Supplier TC	P P P P	V V V V		
1.3	Paper Insulated Copper Conductor (PICC/CTC)	a) Conductor finish b) Dimensions c) Resistivity / Conductivity	B B B	V I T	One Sample/ Supplier different size	IS / PS & DRG	IS / PS & DRG	Supplier TC	P P P	V V V		
1.4	Insulating Paper (used in PICC & CTC)	a) Dimension b) Physical condition & cleanliness c) Electric Proof Strength	B B B	I V T	One Sample/ Supplier different size	IS / PS	IS / PS	Supplier TC	P P P	V V V		
1.5	Press Board	a) Dimensions b) Compressibility c) Shrinkage d) Oil Absorption e) Electrical strength f) Physical condition & cleanliness	B B B B B B	I T T T T T V	One Sample/ Lot	IS / PS	IS / PS	Supplier TC	P P P P P P	V V V V V V		
1.6	Densified Wood	a) Dimension b) Electric strength c) Physical condition & cleanliness	B B B	I T V	One sample / lot	IS / PS	IS / PS	Supplier TC	P P P	V V V		

Prepared by
Rohit Jain
(Rohit Jain)
QC Engineer

Under Approval

Checked & Approved by
(Signature)
(D C Gupta)
Sr DGM (CQX)

QUALITY ASSURANCE PLAN FOR CUSTOMER
M/s GETCO

QUALITY ASSURANCE PLAN FOR RECTIFIER TRANSFORMER
W.O. NO.71158A17100, 7X100 MVA, 220/66 KV

MATERIAL INSPECTION / IN-PROCESS INSPECTION / FINAL INSPECTION

SUB VENDORS / VENDORS / CONTRACTORS WORKS

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Sl. No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTITY OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS	
									M	C	N		
1.7	Gasket	a) Thickness b) Compressibility c) Recovery d) Flexibility	B B B B	I T T T	One sample / lot	IS / PS	IS / PS	Supplier TC	P P P P	V V V V	- - - -		
1.8	Transformer Oil	a) Electric strength b) Tan Delta c) Water Content d) Resistivity	B B B B	I T T T	One sample / tanker	IS	IS	Supplier TC	P P P P	V V V V	- - - -		
2.0	COMPONENTS												
2.1	On Load Tap-Changer	a) IR Test b) Mechanical / Sequence Operation c) Oil Tightness Test for diverter switch oil chamber at 0.5Kg/sq cm at 100 degree C for 1 Hrs. d) Power frequency voltage withstand test between diverter & tap selector to earth e) Operation Test of Complete Tap Changer f) Dielectric Test	B B B B	T T T T	100 %	IS / PS	IS/PS	Supplier TC	P P P	V V V	V V V	Review of TC on surveillance basis	
2.2	Radiators	a) Mounting Dimensional Check b) Pressure test on Assembly c) Paint Film Thickness & Adhesion d) Paint Shade Check	B B B B	I T I V	100 %	IS / PS	IS / PS	Supplier TC	P P P P	V V V V	V V V V		
2.3	Cooling Fans	a) Insulation Resistance b) High Voltage Test	B B	T T	100 %	IS / PS	IS / PS	Supplier TC	P P	V V	V V		

Prepared by
Rohit Jani
(Rohit Jani)
QC Engineer

Under approval

Checked & Approved by
D.C. Gupta
(D.C Gupta)
Sr DGM (COX)

QUALITY ASSURANCE PLAN FOR RECTIFIER TRANSFORMER W.O. NO.71158A17100, 7X100 MVA, 220/66 KV

QUALITY ASSURANCE PLAN FOR CUSTOMER M/s GETCO

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Sl No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTITY	CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
										M	C	N	
2.4	Buchholz Relay	a) Porosity & Element Test b) Gas Volume test c) Loss of Oil & Surge Test d) Continuity Test for Contact (Manually) e) Mechanical Strength Test f) Velocity Calibration Test g) Appearance, Construction and Dimensional Check h) Operational Check	B B B B B B B	T T T T T T V T	100 %	IS / PS	IS / PS	Supplier TC	P P P P P P P P	V V V V V V V V	V V V V V V V V		
2.5	Condenser Bushings-OIP	a) One minute Power Frequency Dry Withstand Test b) Electrical Routine Test	B B	T T	100 %	IS / PS	IS / PS	Supplier TC	P P	V V	V V		
2.5.A	Porcelain Bushing	a) Visual Inspection b) Verification of Dimensions c) Porosity Test on Porcelain d) One Minute Power Frequency Wet Withstand Test	B B B B	V I T T	100 %	IS / PS	IS / PS	Supplier TC	P P P P	V V V V	V V V V	Review of TC on surveillance basis	
2.6	OTT	a) Calibration b) Operational & 2 kV Insulation Test between all Terminals and Earth c) Accuracy Test for Indication and switch setting Scales	B B B	T T T	100 %	IS / PS	IS / PS	Supplier TC	P P P	V V V	V V V		
2.7	WTI	a) Calibration b) Operational & 2 kV Insulation Test between all Terminals and Earth c) Accuracy Test for Indication and switch setting Scales d) Measurement of Temperature Rise with respect to heater Coil Current	B B B B	T T T I	100 %	IS / PS	IS / PS	Supplier TC	P P P P	V V V V	V V V V		
2.8	Air Cell	a) Appearance & Dimension b) Pressure test	B B	V/I T	100 %	IS / PS	IS / PS	Supplier TC	P P	V V	V V		

Checked & Approved by
(Signature)
(D C Gupta)
Sr DGM (COX)

Under approval

Prepared by
(Signature)
(Rohit Jain)
QC Engineer



QUALITY ASSURANCE PLAN FOR RECTIFIER TRANSFORMER
 W.O. NO.71158A17100, 7X100 MVA, 220/66 KV
 QUALITY ASSURANCE PLAN FOR RECTIFIER TRANSFORMER
 M/s GETCO

QUALITY ASSURANCE PLAN FOR CUSTOMER
 M/s GETCO

QUALITY INSPECTION / IN-PROCESS INSPECTION / FINAL INSPECTION

SUB VENDORS / VENDORS / CONTRACTORS WORKS

QP No. QP/PT /11/7
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Sl. No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
2.9	Marshalling Box	a) Check for Overall finish b) Functional Test c) Wiring Continuity d) HV Test on Wiring e) IR Test	B B B B B	V T T T T T	100 %	IS / PS	IS / PS	Supplier TC	V V V V V	V V V V V	V V V V V	Review of TC on surveillance basis
2.10	Pressure Relief Valve	a) Operating Pressure b) Switch Operation c) 2 kV Insulation Test d) Leakage Test at 75% of Operating Pressure for one Hour	B B B B	T T T T	100 %	IS / PS	IS / PS	Supplier TC	V V V V	V V V V	V V V V	
2.11	Magnetic oil gauge	a) Calibration b) Mercury Switch Contact Operation c) 2 kV Insulation Test between Terminals and Earth	B B B	T T T	100 %	IS / PS	IS / PS	Supplier TC	V V V	V V V	V V V	
2.12	Bushing CT	a) Accuracy b) Ratio c) Over Voltage Inter Turn Test d) Knee Point Voltage & Exciting Current e) Sec. Winding Resistance for P S class CT f) Polarity Check g) PF Test on secondary h) IR Test	B B B B B B B	T T T T T T T	100 %	IS / PS	IS / PS	Supplier TC	V V V V V V V	V V V V V V V	V V V V V V V	
2.13	Oil Pumps	a) 2kV for 1 minute insulation test between live terminals and earth b) Oil pressure test on pump casing	B B	T T	100 %	IS / PS	IS / PS	Supplier TC	V V	V V	V V	

Checked & Approved by

 (D.C. Gupta)
 Sr DGM (COX)

Under approval

Prepared by

 (Rohit Jain)
 QC Engineer



BHEL/COX/007/0006

QUALITY ASSURANCE PLAN FOR CUSTOMER M/S GETCO

QUALITY ASSURANCE PLAN FOR RECTIFIER TRANSFORMER W.O. NO.71158A17100, 7X100 MVA, 220/66 KV

MATERIAL INSPECTION / IN-PROCESS INSPECTION / FINAL INSPECTION

SUB VENDORS / VENDORS / CONTRACTORS WORKS

QP No: QP/PT/1117
REV.No:00
DATE:18.07.2014
PAGE: 06 OF 07

Sl. No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
3.3	WINDING	a) Dimensions b) Brazed joints c) Resistance test	B	I T T	100 % 100 % 100 %	DRG DRG DRG	DRG. DRG. DRG.	Ch list	P P P	V V V	V V V	Review of record on surveillance basis
3.4	Core and coil assembly	a) Ratio test on all taps b) Check for healthiness of insulation of conductor joints and leads c) Check for Proper cleanliness for absence of dirt & dust d) Dimensional Check for various clearances (after tanking)	B	T V V	100 % 100 % 100 %	AS PER AGREED TEST SCHEDULE DRG	AS PER AGREED TEST SCHEDULE DRG	TC Ch list	P P	V V	V V	Review of record on surveillance basis
3.5	Treatment process	a) Drying, oil impregnation, Soaking, servicing & oil filling	B	I/V	100 %	AS PER BHEL PROCESS SPEC	AS PER BHEL PROCESS SPEC.	Shop record	P	V	V	Review of records on surveillance basis
3.6	Final inspection	a) Electric Test (i) Routine Test (ii) Type test	A A	T T	100 % One job/WO	AS PER AGREED TEST SCHEDULE	AS PER AGREED TEST SCHEDULE	Test Report	P P	P P	W W	CHP CHP NOTE : Test schedule will be separately sent by design department for Customer approval

Checked & Approved by
(Signature)
(DC Gupta)
Sr DGM (COX)

Prepared by
(Signature)
(Rohit Jain)
QC Engineer

Under approval



BHEL/CQX/
007/0006

QUALITY ASSURANCE
PLAN FOR CUSTOMER
M/s GETCO

QUALITY ASSURANCE PLAN FOR
RECTIFIER TRANSFORMER
W.O. NO.71158A17100, 7X100 MVA,
220/66 KV

MATERIAL INSPECTION / IN-
PROCESS INSPECTION / FINAL
INSPECTION

SUB VENDORS /
VENDORS /
CONTRACTORS
WORKS

QP No. QP/PT 11117
REV No. 00
DATE: 18.07.2014
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Sl. No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			REMARKS
								TC	OS	DRG	
3.7	PRE-SHIPMENT CHECKS	a) Oil Pressure Test b) N ₂ gas tightness (If Reqd.) c) Jacking test d) Completeness of transformer & Packing of accessories	B B B B	T T T V	100 % 100 % 100 % 100 %	DRG SHIPPING LIST	DRG SHIPPING LIST	P P P P	V V V V		

LEGEND:

CLASS
A : CRITICAL
B : MAJOR
C : MINOR

TYPE OF CHECK
V : VISUAL
I : MEASUREMENT
T : TEST

AGENCY
M : MANUFACTURER / SUB CONTRACTOR
C : CONT/NOMINATED INSPECTION AGENCY
N : CUSTOMER

SCOPE OF AGENCY
P : PERFORMER
V : VERIFICATION
W : WITNESS
CHP : CUSTOMER HOLD OINT

FORMAT OF RECORD
TC : TEST CERTIFICATE
OS : OBSERVATION SHEET
DRG : DRAWING
CHECK LIST : CHECK LIST
AAJ/SIPS/IBP : BHEL PURCHASE SPECIFICATION

Note:
1. The items appearing in the QA plan but not applicable to the specific design / contract shall stand cancelled.
2. The items not appearing in the QA Plan, but are applicable to the specific design / contract shall deemed to be included.

Prepared by
(Signature)
(Rohit Jain)
QC Engineer

Under approval

Checked & Approved by
(Signature)
(D C Gupta)
Sr DGM (CQX)

QUALIFICATION CRITERIA

PI NO 140640456

WO NO 71158A17100

- 1 The bidders shall be either Original Equipment Manufacturer or shall be authorized dealer of OEM. As a proof, catalogue of products along with reference list of clients will be given (stating model no, end customer, quantity and year of supply) by OEMs. Authorised distributors are required to give valid authorisation certificate of OEM in addition to catalogue of OEM and their reference list of clients
- 2 Party to have manufacturing capacity of 5 times the tender quantity. As a proof purchase order copies of 35 OLDGAs to be submitted by bidders.
- 3 Performance certificate certifying satisfactory operation for 3 years (as on date of issue of tender) of similar (5 gas or above) OLDGA from Indian clients like SEBs / PGCIL/NTPC etc to be submitted by bidder.
- 4 Equipment offered by bidder should have been type tested in any NABL accredited labs in India or equivalent internationally acclaimed lab. As a proof type tes report not older than 5 years (as on date of issue of tender) based on IS/ IEC to be submitted for offered equipment.



Vinod Jaseja


B K Manjhi

Terms & Conditions of Reverse Auction

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically. and commercially acceptable bidders only shall be eligible to participate.
2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.
13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

GETCO/E/TS - 2XMER01power/R6 Mar 13

Annexure - II
ON Line Dissolved Gas Analysis
Technical Specification For On Line Gas In Oil Analyser

1.0 GENERAL:

The transformer shall be equipped with on line gas in oil analyzer system and remote data transfer /communications. It is intended to individual monitor the evolution of dissolved gases from the oil of transformer to detect and continuously monitor a individual value of gases like H₂(Hydrogen), CH₄ (Methane), C₂H₄ (ethylene), C₂H₆ (Ethane), C₂H₂ (Acetylene), CO₂ (Carbon dioxide), CO (Carbon monoxide), O₂ Oxygen, N₂ (Nitrogen). The system shall be installed on a single, open bore ball or gate valve.

2.0 SCOPE of WORK:

The scope of work shall be to supply, mounting, erection, commissioning, etc; for on line moisture and gas in oil analyzer system of any transformer in GETCO.

- 2.1 Microprocessor based Intelligent Electronic Device (IED), as required, to be on a single open bore ball or gate valve mounted on transformer along with all required fittings and accessories.
- 2.2 One set of centralized monitoring system with suitable software for communicating with IEDs simultaneously with a provision for communicating to two or more IEDs if required in future. The required software shall be loaded in GETCO system at desired location such that all the data/display associated with the system can be visualized and all archiving / trending can be achieved. It shall also give printouts of all required data as desired.
- 2.3 All required interconnection, wiring, cabling with fiber optic cables/RS 485 cables etc., including all required accessories for successful operation of the system.
- 2.4 Required earthing & connection for the system at required location is to be carried out by bidder.
- 2.5 Necessary tools, tackles, calibration equipments, installation Material, required for successful operation of the system is to be carried out by bidder. **Tools required for erection are on returnable basis.**

- 2.6 To supply installation, commissioning and O&M manuals and procedures, etc., in hard and soft form.
- 2.7 To supply standard HOST/User Interface Software in ENGLISH, one with each unit on a CD - ROM.
- 2.8 The system interface shall also include required field cable, patch cable, patch box, associated accessories & hardware's to connect to the GETCO system as required.
- 2.9 Training to GETCO Engineers.

3.0 SPECIFIC TECHNICAL REQUIREMENT:

3.1 Intelligent Electronic Device (IED):

The IEDs shall be suitable for outdoor heavily polluted atmosphere, ambient temperature of 55 degree C and relative humidity of 100 % and shall have minimum degree of protection of IP-55. Necessary type test reports shall be submitted with the bid. **Each IED shall be provided with additional canopy.** The IED shall be suitable for mounting on offered transformer. **The best single point of mounting location to ensure optimum flow of oil in the IED without any external / additional pump & piping shall be decided in co ordination with on line gas in oil analyzer system manufacturer.**

The system shall operate satisfactorily for oil temperature range of -5 to 120 degree C with heat fin adapter and shall be suitable for oil pressure of 100 psi. Provision shall be made available for collection oil samples for DGA and moisture analysis, without disturbing IED or its connections. It shall be possible to carry out the periodic maintenance easily. The normal functioning of IED shall be guaranteed **without necessity of any additives** consumable. The IED shall include an automatic 'self-test' feature.

It shall be possible to down load all information locally and remotely by a PC/ laptop computer. All the information shall also be continuously transmitted to centralized monitoring GETCO system. Necessary serial interfaces shall be provided. **The IED shall be electromagnetically screened and impervious to vibrations.**

3.2 Centralized Monitoring System:

The centralized monitoring system shall be installed in GETCO server for continuous display recording and archiving of information received from all IEDs with a provision for receiving information from future IEDs also. The soft ware shall have menu driven pass word protected real time operating system with self-diagnostic feature. The soft ware shall be suitable for graphical display of gas evolution with daily and hourly trending as well as historical data and event recording. It shall be required to obtain audio visual alarm with suitable multiple thresholds for dissolved gas level 'HIGH', "HIGH - HIGH", 'FAIL'. It shall also possible to configure the IEDs from the centralizing system as well as local.

3.3 Interconnecting Cabling:

Glass Fiber Optic mono mode cables /RS485 cable shall be provided for interconnection of all IEDs and the central monitoring system. The cable shall be laid in HDPE conduits. All required terminations, splicing kits shall be arranged by bidder. Provision shall be kept for installing and terminating cables from future IEDs. It is also intent to monitor gas in oil of transformer through internet. There will not be any wire connection. It will be wireless communication. Any suitable modem shall be provided. Data is to be seen and analyze at corporate office or any other remote locations as desired by GETCO.

- 4.0 List of routine & acceptance tests shall be submitted with the technical bid. Successful bidder has to perform acceptance tests in presence of GETCO representative, as per relevant standard.
- 5.0 Services of on line moisture and gas in oil analyzer system supplier during supply, mounting, erection, testing, commissioning and after sales even beyond guarantee period shall have to be arranged and provided by the bidder.
- 6.0 The bidder shall furnish all guaranteed technical particulars as called for in this specification. Bid not containing this information are likely to be rejected.
- 7.0 The unit can be fitted to any transformer as per need/requirement of GETCO.
- 8.0 It can be shifted from one place to other place as per our need.

9.0 Guarantee for the unit should be 36 months from date of installation or 42 months from the date of supply whichever is earlier. It is submitted in the form of Performance bank Guarantee in 10% of the value.

10.0 The unit is needed within six months.

11.0 Deviation from Specification:

All deviations from this specification shall be separately listed in specified Schedule, in the absence of which, it will be presumed that the provision of the specification are complied with by the bidder.

PRINCIPAL TECHNICAL PARAMETERS OF On line DGA & moisture Analyzer Kit

SR. NO.	Item	Specification										
1	On line DGA analyzer kit	<p>On line DGA analyzer kit</p> <ol style="list-style-type: none"> 1. Be capable for detecting on line gases (individually each gas) from oil of transformer. The system shall be installed on a single, open bore ball or gate valve. 2. Have rugged and reliable design to have field use. 3. It can be shifted from one place to other place as per our need 4. Have self calibration feature. 5. The unit can be fitted to any transformer as per need/requirement of GETCO. 6. Services of on line gas in oil analyzer system during supply, mounting, erection, testing, commissioning and after sales even beyond guarantee period shall have to be arranged and provided by the bidder. 7. One set of centralized monitoring system with suitable software for communicating with IEDs simultaneously with a provision for communicating to two or more IEDs if required in future. The required software shall be loaded in GETCO system at desired location such that all the data/display associated with the system can be visualized and all archiving / trending can be achieved. It shall also give printouts of all required data as desired. 8. Training to GETCO Engineer. 9. Maintenance on transformer as well as oil sample can be easily taken without disturbing unit. <p>Technical Parameters</p> <table border="1" data-bbox="467 1423 1344 1885"> <tr> <td data-bbox="475 1440 672 1472">Power supply:</td> <td data-bbox="719 1440 1110 1472">230V AC\pm 15%, 50Hz \pm 5%</td> </tr> <tr> <td data-bbox="475 1493 672 1560">Measurement of gases</td> <td data-bbox="719 1493 1333 1545">H₂,CH₄,C₂H₆,C₂H₄,C₂H₂,CO,CO₂,O₂,N₂</td> </tr> <tr> <td data-bbox="475 1623 672 1690">Minimum Detection limit -</td> <td data-bbox="719 1570 1295 1749"> 2 PPM-50000 PPM for Hydro carbon 0.5 PPM to 50000PPM for C₂H₂ 5 PPM-5000 PPM for Hydrogen 2 PPM-50000 PPM for CO 20 PPM-50000 PPM for Co₂ </td> </tr> <tr> <td data-bbox="475 1770 607 1801">Oil Temp.</td> <td data-bbox="719 1770 980 1801">10 to 120 degree c</td> </tr> <tr> <td data-bbox="475 1822 639 1885">Operating temperature</td> <td data-bbox="719 1833 980 1864">-10 to 55 degree c</td> </tr> </table>	Power supply:	230V AC \pm 15%, 50Hz \pm 5%	Measurement of gases	H ₂ ,CH ₄ ,C ₂ H ₆ ,C ₂ H ₄ ,C ₂ H ₂ ,CO,CO ₂ ,O ₂ ,N ₂	Minimum Detection limit -	2 PPM-50000 PPM for Hydro carbon 0.5 PPM to 50000PPM for C ₂ H ₂ 5 PPM-5000 PPM for Hydrogen 2 PPM-50000 PPM for CO 20 PPM-50000 PPM for Co ₂	Oil Temp.	10 to 120 degree c	Operating temperature	-10 to 55 degree c
Power supply:	230V AC \pm 15%, 50Hz \pm 5%											
Measurement of gases	H ₂ ,CH ₄ ,C ₂ H ₆ ,C ₂ H ₄ ,C ₂ H ₂ ,CO,CO ₂ ,O ₂ ,N ₂											
Minimum Detection limit -	2 PPM-50000 PPM for Hydro carbon 0.5 PPM to 50000PPM for C ₂ H ₂ 5 PPM-5000 PPM for Hydrogen 2 PPM-50000 PPM for CO 20 PPM-50000 PPM for Co ₂											
Oil Temp.	10 to 120 degree c											
Operating temperature	-10 to 55 degree c											

		Oil sampling method	On line
		Accuracy	5% or + LDL(Lower detection Limit) whichever is greater
		Measuring time	continuous process
		Communication	Rs 485, Rs 232, Modbus, IEC 61850
		Data management	
		Software:	Window based, suitable for Data analysis of measuring results.
		Display:	External PC or laptop
		Storage:	Simple xml format
		PC communication:	RS232 or equivalent port
		Software analysis :	Key gas method, Rogers ratio & Duval triangle
		Environmental	
		Operating temp:	-10 to 55 deg. C
		Humidity:	100% RH, Non condensing

GUARANTEED TECHNICAL PARTICULARS FOR ON LINE GAS IN OIL ANALYZER

(TO BE FILLED IN BY THE TENDERER AND FURNISH WITH TECHNICAL BID)

The GTP is to be filled up in this format and, in the page of Tender Specification only, to be submitted in duplicate along with the offer. This is intended for speedy comparison of various bidders GTP. The Tenderer shall fill in the particulars against appropriate items in respect of each rating.

Sr. No.	Description of Technical Parameter of the particular Kit / Equipment	Rating/ Range
1	Power requirements	
2	Measurement of gases	
3	Minimum Detection limit	
4	Dimensions and weight	
5	Oil Temp.	
6	Operating temperature	
7	Humidity	
8	Technology	
9	Oil sampling method	
10	Extraction method	
11	Extraction time	
12	Accuracy	
13	GS separating Column	
14	Sensor type	
15	Carrier Gas (If required) Yes/No	
16	Name of carrier Gas with consumption of gas per sample	
17	Communication	

18	Data download software	
19	Software analysis as per Key gas method, Rogers ratio & Duval triangle	
20	Calibration required	
21	Can shift from one place to other	

Corrignedum-1ON LINE DGA

Point No. 1: Online DGA parameter kit:

Be capable for detecting On line gases (Individually each Gas) from oil of transformer. The system shall be installed on a single, open bore ball or gate valve. However, if the bidder desires for additional valve in view of closed loop system, he can offer for the same.

Sub Point No. 9:

Technical parameters table

Measurement of gases be read as under

- (A) Mandatory: H₂, CH₄, C₂H₆, C₂H₄, C₂H₂, CO, CO₂ individually with measurement of moisture.
 (B) Optional Gases: O₂ & N₂

Page No. 3

Point No. 1:

Intelligent Electronic Device (IED)

Specific technical requirement (On line DGA)

Please add following sentence after completion of first para:

"However, if the bidder desires floor mounting IED system on a movable trolley can offer for the same."

Page No. 3

Point No. 3:

Specific technical requirement (On line DGA),

Interconnecting cabling

Please replace first sentence by following sentence:

"Glass Fiber Optic mono mode cables /RS485 cable/ armored instrumentation cable shall be provided for interconnection of all IEDs and the central monitoring system."

Page No. 4

Point no. 9 & 10 are not applicable.

(V. H. JASEJA)
 वरिष्ठ प्रबंधक (टी.आर.ई.)
 Senior Manager (T.R.E.)
 श्री. एन. ए. एल. जंहासी
 B. H. E. L., JHANSI