



ISO
9001:2000
&14001:2004
NAVARATNA
COMPANY

भारत भारी विद्युत निगम लि.
(भारत भारी विद्युत निगम लि.)
MATERIAL MANAGEMENT (PURCHASE)
भारत भारी विद्युत निगम लि., केंद्रीय कार्यालय, बल्लभपुर, हरिद्वार
CENTRAL FOUNDRY FORGE PLANT, BHEL
भारत भारी विद्युत निगम लि., केंद्रीय कार्यालय, बल्लभपुर, हरिद्वार
RANIPUR, HARIDWAR (INDIA) – 249403
Phone No.+91-1334-281639, FAX No. 225892
e-mail : s_kumar@bhelhwr.co.in

M/S

Sub: Tender Enquiry No: FF/PPX/5314/P/73239G/1 dated 10/10/2007 due on 27/11/2007.

Dear Sir,

We are pleased to invite offer as per enclosed specifications, terms and conditions and instruction to bidders, in sealed covers for the under mentioned equipment/systems.

Sl No	Tender No	Description of Material	Qty No	Date & Time of Opening
01	5314/P/371/73239G/1	PORTABLE X-RAY FLUORESCENT ANALYSER	01 NO	27 TH NOV 2007 2.00 PM

KINDLY READ INSTRUCTIONS TO BIDDERS. OFFER NOT IN ACCORDANCE WITH THE INSTRUCTIONS IS LIABLE TO BE DISQUALIFIED AND IGNORED.

PLEASE VISIT www.bhel.com or www.bhelhwr.co.in for more details and tender documents.

Thanking You,
Yours Faithfully,
For & ON BEHALF OF CFFP, BHEL, HARIDWAR

(SUNIL KUMAR)
SR.MANAGER (PUR)
CFFP, BHEL, HARIDWAR

LIST OF DOCUMENTS:

1. Instruction to bidders.
2. Acceptance of commercial terms by vendor: Annexure-I.
3. List of consortium banks: Annexure-II.
4. Proforma for bank guarantee (security deposit): Annexure-III.
5. Proforma for bank guarantee (performance bank guarantee): Annexure-IV.
6. Technical specification.

Instruction to bidders

1. Tender opening date & time 27/11/2007 at 2.00 P.M.

2. **TENDER** addressed to The **Material Manager, CENTRAL FOUNDRY FORGE PLANT, BHEL, HARDWAR** must be posted with due allowance for postal delay or deposited in the Tender Box, placed in the office of **Purchase Department, Administrative Building Ground Floor, CFFP**. Tender must reach this Office or deposited in the Tender Box before 2.00 PM on or before the tender opening date.

3. **TENDERS RECEIVED AFTER OPENING TIME & DATE ARE LIABLE TO REJECTION.**

4. Submit the tender in two parts i.e.

Part-I Technical / Commercial Bid
Part-II Price Bid

Technical / Commercial (part one) & Price Bid (part two) should be put in separate sealed envelopes. Both envelopes should be super scribed with **Tender Number, Date of Opening & Technical / Commercial Bid and Price Bid** respectively along with name of firm.

Both the envelopes i.e. containing Technical / Commercial Bid and Price Bid should again be kept in one envelope super scribed again with Tender No. and Date of Opening and the name of firm submitting the tender.

Part-I Envelopes super scribed with Technical / Commercial Bid must contain all information especially:-

(a) Specification of the material being offered as compared with the specifications mentioned in tender documents.

Deviations if any should be clearly mentioned.

(b) All commercial terms i.e. packing, forwarding, ST/STT/VAT/CST, Excise duty, Bank Charges, payment terms & Insurance etc. Mention present rate of applicable taxes & duties even if inclusive in rates.

(c) Delivery terms & period required for supply from order.

(d) Confirm to submit all required commercial documents (tax invoice, cenvatable duplicate copy of invoice, packing list, transit sale agreement etc.) & technical documents (TC/GC/QP etc.)

(e) Registration Numbers of SSI, Central Excise, Sales tax, Income tax, DGS & D, ECC etc.

(f) Unpriced copy of Price Bid.

Part-II Envelopes super scribed with Price Bid should contain priced copy of Price Bid. The price should be mentioned both the figures and words.

5. Authorized Signatory should authenticate tender documents.

6. **Techno-commercial bid (Part-I)** will be opened on the due date at 2.00 PM. in the presence of participating vendors or authorized representatives, who may wish to be present. Representative deputed to witness tender opening must produce an authority letter from the signatory of offer. After evaluation of technical bids & finalization of technical, commercial terms & condition, price bid of only successful vendors will be opened. Priced bid opening date will be intimated separately.

7. The goods offered must conform to the required BIS/BHEL specification of the latest revision. Manufacture's name, trade name etc. must be mentioned. Enclose complete illustrative Technical literature/catalogue drawing etc.. Original manufacturer or processor's details must be mentioned in the offer for assessment of suitability.

8. **Guarantee** the goods offered against all defects for a period of 24 months from the date of commissioning. The supplier shall remove any defect, free of cost and at their risk.

9. **Terms of payment:**

1) 80% of the material cost to be paid on receipt of equipment. Balance 20% of material cost will be paid after satisfactory erection & Commissioning and on submission of performance bank guarantee equal to the value of 20% of the total order value valid for entire guarantee period.

2) 100% Erection and commissioning and job proving charges shall be paid after satisfactory erection and commissioning of equipment at CFFP, BHEL

10. **Inspection** shall be carried out after receipt of material in CFFP. The results obtained at CFFP shall be final and binding. BHEL may carry out inspection at vendors works too.

wherever applicable without any extra cost. This may please be clearly confirmed in the quotation without which the offer may not be considered.

12. **Please quote minimum prices.** Prices shall be compared on the basis of total cost to CFFP /BHEL, Hardwar. Charges, if any, such as packing, forwarding, taxes, transportation up to CFFP Stores, as applicable in addition to ex works prices should be clearly mentioned. For supplies originating from out side India price should be quoted both on FOB and CIF basis. Port of discharge Mumbai & port delivery CFS Mulund.

13 **Validity** of offers for acceptance in part or in full should be for 6 month from the date of tender opening. Price should remain fixed till the supplies are completed unless specified otherwise.

14. **Delivery** in the promised period is the essence of contract. The supply must be made with in the delivery period mentioned. Alternative delivery period may be offered if supply during the required delivery period cannot be arranged. Please note that

(a) If the delivery is not completed with in the prescribed period specified in the order, supplier shall be liable to pay an unconditional penalty of 1/2% of the price of goods in arrears per week or part there of subject to a maximum of 10%

(b) For material not supplied in time and/or not conforming to specification, the purchaser shall have the discretion to resort purchase from else where on the risk and cost of the supplier without any notice.

15. **Penalty:** Orders placed against this enquiry will be subjected to normal clauses for imposing of penalty, liquidated damages, risk purchase, cancellation and arbitration etc. as per terms of purchase order in case of delay in effecting supply or any other defaults.

16. Bharat Heavy Electricals Ltd. Ranipur (Hardwar) reserves the right to accept or reject any or all tenders without assigning any reason there of.

17. Specific confirmation to the acceptance to the above terms and condition should be given in the quotation by the tenderer,

18. Tenders not submitted in the prescribed manner are likely to be ignored/ rejected.

19. TENDERER MUST ENSURE THAT ALL STATUTORY & ISO REQUIREMENTS ARE COMPLIED WITH.

20. CFFP, BHEL, HARIDWAR reserves the right to opt for e-auction/reverse auction for obtaining best prices.

21. CFFP, BHEL, HARIDWAR reserves the right to amend technical or commercial terms and conditions of enquiry.

IMPORTANT NOTE:

IN CASE OF ANY DIFFERENCE IN TECHNICAL SPECIFICATION AND GENERAL TERMS AND CONDITIONS, TECHNICAL SPECIFICAION WILL PREVAIL.

(SUNIL KUMAR)
SR.MANAGER (PUR)
CFFP, BHEL, HARIDWAR

ACCEPTANCE OF COMMERCIAL TERMS BY BIDDERS:

DESCRIPTION	VENDOR'S CONFIRMATION
1) <u>PAYMENT TERMS:</u> 1) 80% of the material cost to be paid on receipt of equipment. Balance 20% of material cost will be paid after satisfactory erection & Commissioning and on submission of performance bank guarantee equal to the value of 20% of the total order value valid for entire guarantee period. 2) 100% Erection and commissioning and job proving charges shall be paid after satisfactory erection and commissioning of equipment at CFFP, BHEL <u>NOTE:</u> a) As per payment terms, minimum 20% will be released by BHEL after successful erection, commissioning and job proving. b) Further this 20% can be released against submission of performance bank guarantee valid for entire warrantee period from the date of commissioning. c) The security deposit is to be as per the tender condition.	
<u>1.1 LOADING ON PAYMENT TERMS IF NOT AGREED BY VENDOR WILL BE AS FOLLOWS:</u> Loading: Advance amount, if any (Amount X): 1.5% per month for the quoted delivery period for the amount 'X' Payment at the time of dispatch against shipping/dispatch documents (Amount Y): "1.5% per month for the amount X+Y exceeding 80% of contract value i.e. 1.5% of (X+Y-0.8Z) where Z is the contract value". In case any bidder does not accept any of the condition at (a) to (c) above then, their offer is likely to be rejected by BHEL and technical bid will not be processed, and no correspondence in this regards will be entertained.	
1.2 <u>P.B.G. TERMS:</u> Performance Bank Guarantee to be submitted on the prescribed format equal to the value of 20% of the total order value valid WARRANTY / GUARANTEE agreed period. This bank guarantee, in the format to be prescribed by BHEL, shall have to be submitted before release of last balance payment (see annexure II and IV)	
1.3 <u>CURRENCY OF PAYMENT:</u> Mention the currency in which payment has to be made.	
1.4 <u>FOR INDIGENOUS SUPPLY:</u> For indigenous supply the currency shall be Indian Rupees	
1.5 <u>ERECTION AND COMMISSIONING CHARGES:</u> For Indian Suppliers: It should be quoted in Rupees. For Foreign Suppliers: If erection and commissioning is being carried out by persons residing in India, it should be quoted in Indian Rupees.	
1.6 <u>TAXES:</u> All statutory taxes, if any, will be deducted at source & to be borne by the beneficiary. Tax deduction certificate shall be issued at the end of financial year if required.	
2.) <u>SECURITY DEPOSIT:</u> Vendor has to submit security equal to the amount of 10% of the total order value in the currency of order within one month of receipt of order in the form of Bank Guarantee in BHEL format valid for delivery period.	

2.1 SUBMISSION OF BANK GUARANTEE : All bank guarantees for security deposit as well as for performance should be from one of the BHEL consortium banks and the bank guarantee should be in the Performa prescribed by BHEL (see annexure-II & III).	
3) PENALTY FOR LATE DELIVERY: Penalty shall be applicable for delayed delivery @ 0.5% per week and part thereof subject to a maximum of 10% for total P.O. value. 3.1 LOADING ON PENALTY FOR LATE DELIVERY IF NOT AGREED BY VENDORS ON ABOVE TERMS: If any vendor do not accept the LD @ of 0.5% per week and part thereof subject to a maximum of 10% of total PO value, their offer may be ignored. Vendors accepting LD terms different from the proposed terms of 0.5% ,maximum 10% will be loaded @ %age deviation from the range of 10% on their prices (FOB for imported and ex-factory for indigenous). If the vendor does not accept as above their offer is likely to be ignored and technical bid will not be processed.	
4) DELIVERY OF THE EQUIPMENT: Firm delivery period for the equipment to be stated w.e.f. date of LOI/ Order.	
5) SETTLEMENT OF DISPUTES: - Settlement of disputes through arbitration shall be in accordance with Arbitration Rules of Conciliation and Arbitration of the ICC, Paris. The venue of arbitration shall be Delhi. The courts of Delhi shall have exclusive jurisdiction. - For Indigenous Source. The venue of arbitration shall be Haridwar Court, which will have exclusive jurisdiction.	
6) AUTHORIZATION OF PRE-INSPECTION: BHEL is authorized to pre inspect the material at works. In case CFFP,BHEL wants to pre inspect the material, then it will be dispatched only after getting clearance form BHEL.	
7) DRAWING / DATA APPROVAL: Any drawing / data approval required from BHEL after placement of order shall be the responsibility of the vendor and any delay on account of the same shall be the responsibility of the vendor and have no bearing on the penalty applicable.	
8) DRAWING/DESIGN/ INFORMATION USE: The vendor will have to give an undertaking that the drawing / design / information enclosed with the enquiry / proposed order will not be parted to any agency and will also not be used for manufacturing for any other customer.	
09) 5 SETS OF O&M MANUAL: 5 Sets of Operation & Maintenance Manual shall have to be supplied along with the equipment. Final payment will be released only after receipt of the required documentation.	
10) TOOLS AND SPARES: Special tools and recommended spares required.	
11) TRAINING: Vendor shall provide required training to BHEL personnel free of cost.	
12) WARRANTY/ GUARANTEE: 24 months from the date of commissioning.	

13) <u>CONTACT PERSON</u> : Name of contact person, Name, Designation, Department, complete postal, E-mail address & Fax no, phone, Mobile no. to be mentioned.	
14) PHYTO SANITARY CERTIFICATE : Phyto sanitary Certificate essential for packages (Wooden).	
15) VALIDITY : Validity of the offer should be 180 days from tender opening.	
16) BANK CHARGES : Bank Charges to be borne by vendor.	

Note: Attach separate sheet for additional information if necessary. The above terms & condition supersedes the terms & conditions found contract.

ANNEXURE II

LIST OF CONSORTIUM BANKS:

- | | |
|--|---|
| <p>1. State Bank of India
CAG Branch,
10-th Floor, Vijaya Building,
Barakhamba Road,
New-Delhi-110001</p> <p>2. Canara Bank
74, Janpath,
New-Delhi-110001</p> <p>3. Punjab National Bank
74, Janpath,
New-Delhi-110001</p> <p>4. Bank of Baroda
Corporate Banking Branch,
11th Floor, BOB Building,
Sansad Marg,
New-Delhi-110001</p> <p>5. Deutsche Bank
Tolstoy Marg,
New-Delhi-110001</p> <p>6. State Bank of Hyderabad
Surya Kiran Building,
K. G. Marg,
New-Delhi-110001</p> <p>7. State Bank of Mysore
Antriksh Bhawan,
K. G. Marg,
New-Delhi-110001</p> <p>8. State Bank of Mysore
Industrial Finance Branch,
Ramanashree Arcade,
MG Road,
Bangalore-560001</p> <p>9. State Bank of Travancore
Travancore House,</p> | <p>10. HDFC Bank Ltd
5th Floor, HT House,
K G Marg,
New-Delhi-110001</p> <p>11. CITI Bank N A
Jeevan Vihar Building,
Sansad Marg,
New-Delhi-110001</p> <p>12. Standard Chartered Bank
H2 Block, Connaught place,
New-Delhi-110001</p> <p>13. ICIC Bank Ltd.
ICIC Tower,
Bisham Pitamah Marg,
Pragati Vihar,
New Delhi 110003</p> <p>14. IDBI Bank Ltd.
19, K G Marg,
Surya Kiran Building,
New-Delhi-110001</p> <p>15. HSBC Ltd.
ECE House,
28 KG Marg,
New-Delhi-110001</p> |
|--|---|

A. Bhatnagar, P. C. Bhatnagar,
New-Delhi-110001

**PROFORMA FOR SECURITY DEPOSIT
(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT)**

This deed of guarantee made thisday ofTwo Thousand.....by (bank) hereinafter called 'the Guarantor') which expression shall unless repugnant to the context or meaning thereof be deemed to include its successors and assigns)IN FAVOUR OF M/s Bharat Heavy Electricals Limited (A Government of India Undertaking) a Company incorporated under the Companies Act, 1956 having its registered office at "BHEL House" Siri Fort, New Delhi 110 049 , through its Unit/Division at Hardwar (Central Foundry Forge Plant) hereinafter called " the Company" (which expression shall unless repugnant to the context of meaning thereof be deemed to include its successors and assigns).

WHEREAS M/s..... (hereinafter referred to as the vendor) have entered into a contract bearing no.....Dated.....(Hereinafter referred to as "the Contract") for the supply ofWith the Company.

AND WHEREAS the Contract interalia provides that the vendor shall furnish Security Money to the Company in the form a Bank Guarantee for a sum of Rs.....(Rs.....only) as Security for due and faithful execution of deliveries within specified period in the contract.

AND WHEREAS THE VENDOR has approached the Guarantor and in consideration of the arrangement arrived at between the Vendor and Guarantor; the Guarantor has agreed to give the guarantee as hereinafter mentioned in favour of the Company.

NOW THIS DEED WITNESS AS FOLLOWS:-

- (1) The Guarantor do hereby guarantee to the Company the due and faithful performance, observance or discharge of the Contract by the Vendor and further unconditionally and irrevocable undertake to pay the Company without demur and merely on demand to the extent of Any claim made by the Company on them for any loss, damage, costs charges and expenses caused to or suffered by the company by reason of the vendor making any default in the performance, observance or discharge of the terms , conditions stipulations or undertakings or any one of them gas contained in the Contract.
- (2) The decision of the Company whether any default has occurred or has been committed by the Vendor in the execution of the supplies, observance or discharge of any of the terms, conditions stipulations or undertakings or any one of them as contained in the Contract and or as to the extent of loss, damage, costs ,charges and expenses caused to or suffered by the Company by reason of the vendor making any default in the performance, observance or discharge of any of the terms, conditions, stipulations or undertakings or any one of them shall be conclusive and binding on the Guarantor irrespective of the fact whether the vendor admits or denies the default or questions the correctness of any demand made by the company in any Court, Tribunal or Arbitration Proceedings or before any other authority.
- (3) The Company shall have fullest liberty without affecting in any way the liability of the Guarantor under this guarantee, from time to time to enforce or forbear from enforcing any of the terms and conditions governing the contract or securities available to the Company and the Guarantor shall not be released from its liability under these presents by any exercise by the Company of the liberty with reference to the matters aforesaid or by reason of time being given to the vendor or any other forbearance, act or commission of the part of the company or any indulgence by the company to the vendor or of any other matter or thing whatsoever which under the law relating to sureties, would but for this provision have the effect of so releasing the Guarantor from its liability under this Guarantee.
- (4) The Guarantor further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken to the performance of the Contract and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged and till the Company certifies that the terms and conditions of the Contract have been fully and properly carried out by the Vendor and accordingly discharges this Guarantee, subject, however, that this Guarantee is only valid for written demands by the Company on or before.....(specify date).

The Guarantor undertake not to revoke this Guarantee during the period it is in force except with the previous consent of the Company in writing and agree that any liquidation or winding up or insolvency or dissolution or any change in the constitution of the Vendor or the Guarantor shall not discharge the Guarantor's liability hereunder:

It shall not be necessary for the Company to proceed against the Vendor before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them notwithstanding any security which the Company may have obtained or obtain from the Vendor shall at the time where proceedings are taken against the Guarantor hereunder by outstanding or unrealized.

The Guarantor hereby declares that it has power to execute this guarantee under its Memorandum and Articles of Association and the executants have full powers to do so on its behalf under the Power of Attorney dated.....granted to him by the proper authorities of the Guarantor..

IN WITNESS whereof the (Bank) have caused this deed to be signed hereunder on their behalf on the date first above mentioned.

Signed for and on behalf of the (Bank)

Name:

Designation:

Address:

Fax No. (With country code):

E-mail address:

NOTE: IN CASE A BANK IN INDIA IS GIVING THIS BANK GUARANTEE; IT WILL BE EXECUTED ON A STAMP PAPER OF RS. 62.50 BUT IF IT WILL BE FROM AN OVERSEAS BANK, IT WILL HAVE TO BE EXECUTED AS PER LAWS OF THAT COUNTRY.

**PROFORMA BANK GUARANTEE
(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT)**

This deed of guarantee made thisday of.....Two Thousand.....by (bank)hereinafter call ‘the Guarantor’) which expression shall unless repugnant to he context or meaning thereof be deemed to include its successors and assigns)IN FAVOUR OF M/s Bharat Heavy Electricals Limited (A Government of India Undertaking) a Company incorporated under the Companies Act,1956 having its registered office at “BHEL House” Siri Fort, New Delhi 110 049, through its Unit/Division at Hardwar (Central Foundry Forge Plant) hereinafter called “the Company” (which expression shall unless repugnant to the context or meaning thereof be deemed to include its successors and assigns).

WHEREAS M/s.....(hereinafter referred to as the vendor) have entered into a Contract bearing no.....dated.....(hereinafter referred to as “ the Contract”) or the supply of.....with the Company.

AND WHEREAS the contract interalia provides that the vendor shall furnish to the Company a Performance Bank Guarantee for a sum ofas security for due a faithful performance of the Contract in the form and manner specified therein.

AND WHEREAS THE VENDOR has approached the Guarantor and in consideration of the arrangement arrived at between the Vendor and Guarantor; the Guarantor has agreed to give the Guarantee as hereinafter mentioned in favour of the Company.

NOW THIS DEED WITNESS AS FOLLOWS:

- (1) The Guarantor do hereby guarantee to the Company the due and faithful performance, observance of discharge of the Contract by the Vendor and further unconditionally and irrevocably undertake to pay the Company without demur and merely on demand to the extent ofany claim made by the Company on them for any loss, damage, costs, charges and expenses caused to or suffered by the Company by reason of the vendor making any default in the performance, observance or discharge of the terms, conditions stipulations or undertakings or any one of them as contained in the Contract.
- (2) The Company shall have fullest liberty without affecting in any way the liability of the Guarantor under this Guarantee, from time to time to enforce or forbear from enforcing any of the terms and conditions governing the contract or securities available to the Company and the Guarantor shall not be released from its liability under these presents by any exercise by the Company of the liberty with reference to the matters aforesaid or by reason of time being given to the Vendor any other forbearance, act or commission on the part of the Company or any indulgence by the Company to the Vendor or of any other matter or thing whatsoever which under the law relating to sureties, would, but for this provision have the effect of so releasing the Guarantor from its liability under this Guarantee.
- (3) The Guarantor further agree that the Guarantee herein contained shall remain ion full force and effect during the period that would be taken for the performance of the Contract and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged and till the Company certifies that the terms and conditions of the Contract have been fully and properly carried out by the Vendor and accordingly discharges this Guarantee, subject, however, that this Guarantee is only valid for written demands by the Company on or before.....(specify date).

The Guarantor undertake not to revoke this Guarantee during the period it is in force except with the previous consent of the Company in writing and agree that any liquidation or winding up or insolvency for discharge the Guarantor’s liability hereunder:

It shall not be-necessary for the Company to proceed against the Vendor before proceeding against the Guarantor and the Guarantee herein contained shall be enforceable against them notwithstanding any security which the Company may have obtained or obtain form the Vendor shall at the time where proceedings are taken against Guarantor hereunder be outstanding or unrealized.

The Guarantor hereby declares that it has power to execute this guarantee under it is Memorandum and Articles of Association and the executants has full powers to do so on its behalf under the Power of Attorney dated.....granted to him by the proper authorities of the Guarantor.

IN WITNESS whereof the (Bank) have caused his deed to be signed hereunder or their behalf on the date first above mentioned.

Signed for and on behalf of the (Bank)

Name:

Designation:

Address:

Fax No.: (with country code)

Email address

NOTE: IN CASE A BANK IN INDIA IS GIVING THIS BANK GUARANTEE, IT WILL BE EXECUTED ON A STAMP PAPER OF RS. 100.00 BUT IF IT WILL BE FROM AND OVERSEAS BANK. IT WILL HAVE TO BE EXECUTED AS PER LAWS OF THAT COUNTRY.



**SPECIFICATION
FOR
PORTABLE X-RAY ANALYSER**

**No: CFF/CML-01
Rev No.: 00
Date: 16.11.2006**

1.0. OBJECTIVE :

This technical specification covers the supply & commissioning of X-Ray Fluorescent Analyser complete with accessories for testing metals.

2.0. TECHNICAL REQUIREMENTS:

- 2.1 The equipment should be capable of analysing low Alloy Steel, Stainless Steel, Ni, Ti, Co, Mo, Cu, Pb, Sn based alloys, Ferro-alloys, refractories, Cr in Chromite Sand etc.
- 2.2 It should be capable of analysing Fe-alloys & materials containing Mg, Si, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Zr, Mo, Pb, Sn, Ag, Cd etc. in the range of 0.05% to 99%.
- 2.3 X-Ray tube shall be of 10-40kv, 10-50µa.
- 2.4 It should have rechargeable Li-Ion Batteries.
- 2.5 It has to be portable, handy and light weight.
- 2.6 The instrument should be equipped with a detachable handheld PC with display having Windows Operating System.
- 2.7 It should be amenable for connection to an external PC for data transferring. All required softwares to be included.
- 2.8 A portable wireless printer, capable of printing analysis results, should be included as an optional accessory and the price may be quoted separately.

3.0. GENERAL REQUIREMENTS:

- 3.1 Instrument should be guaranteed for atleast two years of trouble free service.
- 3.2 The X-Ray tube should be guaranteed for 2 years of trouble free performance.
- 3.3 Accessories to be included.
 - 3.3.1 Water proof carrying case.
 - 3.3.2 Two sets of Li-ion Batteries.
 - 3.3.3 Battery Charger. Qty.1 no.
 - 3.3.4 AC adaptor for operation of instrument directly on 230v/50 Hz power supply.
- 3.4 The equipment should be tropicalized for operating temperatures from 4 °C to 50 °C, humidity 20-95 % (RH) & dusty atmosphere.
- 3.5 Instrument should follow international safety norms applicable for X-Rays and should go to Technical Requirements.
- 3.6 Supplier should update the softwares free of cost for 5 years. Supplier should also arrange promptly to debug the software problem whenever it is required for smooth operation.
- 3.7 Equipment should be calibrated and the standard samples for Fe-Mo, Fe-V, Fe-Si, Fe-Cr, and Chromite Sand for analysis of its elements, should be provided. A rate list of "Standards" also to be provided.
- 3.8 Training to be provided to BHEL personnel for operating & maintaining the equipment.

	Prepared	Checked	Approved
Sign. & Date			