

TENDERER'S COPY

TENDER NO.: DLI/PAN-1/R&M-C&I/07_083

TENDER SPECIFICATION

FOR

**R&M OF CONTROL & INSTRUMENTATION PACKAGE AND
EXCITATION SYSTEM FOR 110MW UNIT-1 AT TAU DEVILAL
TPS PANIPAT HARYANA**

PART I – TECHNICAL BID



Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301.INDIA



ISO 9001-2000, ISO 14001
and OHSAS 18001 certified
Company

Regional Service Centre

Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)

Power Sector – Northren Region,

Plot No. 25 , Sector - 16A ,

Distt. Gautam Budh Nagar, NOIDA – 201 301.INDIA

Phone: 0091-0120-2515408 / 2515441 / 2515449

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Email: kaushik@bhelnsr.co.in / rkm@bhelnsr.co.in

TENDER NO.: [DLI/PAN-1/R&M-C&I/07_083](#)

IMPORTANT NOTE

PURCHASER OF THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECTS MUST BE SUBMITTED BACK AS PART OF THE BID WITHOUT WHICH THE SAME IS LIABLE TO BE REJECTED BY BHEL.

THIS TENDER SPECIFICATION ISSUED TO:

M/S-----

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TENDER NOTICE

SEALED TENDERS ARE INVITED FROM THE CONTRACTORS FULFILLING QUALIFYING REQUIREMENTS FOR THE “R&M OF CONTROL & INSTRUMENTATION PACKAGE AND EXCITATION SYSTEM FOR 110MW UNIT-1 AT TAU DEVILAL TPS PANIPAT HARYANA”

TENDER NO.: DLI/PAN-1/R&M-C&I/07_083

QUALIFYING REQUIREMENTS:

1. Tenderer who wants to participate should have executed at least One Contract of Value Rs 60.0 Lacs, or Two Contracts of Value Rs 37.5 Lacs each or Three Contracts of Value Rs 22.5 Lacs each towards **Erection Testing and Commissioning work of C&I Package** in Thermal Power Plants/Combined Cycle Power Plants of rating 60MW and above or equivalent during last five years directly obtaining such order from BHEL or Utilities (State Electricity Boards/State Power corporations/Private Power Generation Companies of repute).
2. Tenderer should own or should have proper tie up for arrangement of most of the T&Ps and Testing /calibrations facilities to be deployed by them/arranged by them for the subject work. Tenderer must furnish credentials for fulfillment of criteria given against SL NO. 1 & 2 along with their technical bid.
3. Tenderer should also have an average annual turnover of minimum of Rs. 25 Lacs (Rupees Twenty Five Lacs only) during preceding three years (2004-05, 2005-06 & 2006-07). Tenderer should submit audited balance sheet and profit and loss account of the company for last three years in support of above.

NOTES & GUIDELINES FOR THE TENDERER.

2. The Tender Documents comprise of following;

1. General Conditions of Contract (GCC), Special Conditions of Contract (SCC), Tender Notice, Project Synopsis etc
(b) Price Bid / Rate Schedule

2. Tender Documents with complete details are hosted in this web page www.bhel.com. Bidder(s) intending to participate may download the tender document from the web site. Bidder(s) downloading the tender documents from the web site, shall remit Rs.1000/- (Rupees One thousand only) in the form of crossed demand draft (non-refundable), in favour of BHEL, NOIDA along with their offer
3. Bidder(s) can also purchase hard copy of tender documents from this office. Tender documents (non transferable) will be issued on all working days between 09.30 Hrs. to 12.30 Hrs within the sale period i.e **upto 20.11.2007** on payment of Rs.1,000/- (non-refundable) either in cash or by crossed demand draft in favor of BHEL, NOIDA. Request for issue of tender document should clearly indicate Tender No. and work.
 - i. Tenders must be submitted to the undersigned **latest by 22.11.07 time: 14:00Hrs** Technical bids shall **be opened at 15.30 Hrs. on 22.11.07**
 - ii. Earnest Money Deposit (EMD) : Refundable, Non-interest bearing **EMD of Indian Rupees 1,00,000/- (Rupees One Lac only)** shall be deposited by Account Payee Pay Order 'OR' Demand Draft in favour of " Bharat Heavy Electricals Limited" payable at Delhi, INDIA. Those bidders who have already deposited 'One Time 'EMD' of Rs. **1,00,000/-** with BHEL, PSNR, NOIDA need not submit EMD with the present tender.
4. Tenders not accompanied with Full Earnest Money Deposit, as indicated above, will not be considered.
5. All corrigenda, addenda, amendments and clarifications to this Tender will be hosted in this web page and not in the newspaper. Bidders shall keep themselves updated with all such amendments.
6. BHEL reserves the right to accept or reject any or all tenders without assigning any reason whatsoever.
7. BHEL takes no responsibility for any delay/loss of documents or correspondences sent by courier/post.
8. Purchase Preference will be given to CPSUs as per Govt. Guidelines.
9. The Tenderers shall submit both Technical bid(part-1) and Price bid(part-II) in two separately sealed envelopes. These two sealed bids shall be kept in third sealed envelope as per the procedure for submission of sealed bid.
10. BHEL reserves the right to process the tender on Reverse Auction basis amongst the bidders evaluated as competent in technical bid.

11. Only the technically competent parties emerged in evaluation of the technical bids shall be called for training in reverse auction process for which no TA & DA or accommodation or incidental expenses shall be borne/re-imbursed by BHEL. As such participation in the Reverse Auction training process shall be at the cost of the Tenderers . However the training shall be free of cost.
12. The Tenderers shall submit duly signed blank Price Bid formats along with technical bid as a token of acceptance to quote for all quantities indicated therein.
13. In the event of reverse auction, only **"Total Value"** indicated in the Sealed Price Bid shall be considered for Bidding Process.
14. At the conclusion of the reverse auction, the successful bidder's final price offer (quote) shall be considered and the award shall be made on item-wise unit rate deduced in proportion to original sealed price bid of the successful bidder in case any variation of proportionality is observed in the final Rate Schedule submitted by the Bidder.
15. **Unsolicited rebate / discount shall not be accepted after bid opening**

DGM(SCT)
SAS-NOIDA

Bharat Heavy Electricals Limited
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PROCEDURE FOR SUBMISSION OF SEALED TENDERS:

The tenderers must submit their tenders as required in two parts in separate sealed covers prominently superscribed as Part-I Technical bid and Part-II ,Price bid also indicating on each of the cover tender specification no., date and time as mentioned in tender notice.

TECHNICAL BID (COVER-I)

Except Price bid Part-II, complete set of tender document consisting of General conditions of Contract, “Technical specification & Special terms and condition” (Part-I) issued by BHEL shall be enclosed in Part I Technical Bid only. All schedules, data sheets and details called for in the specification shall also be submitted along with technical bid. All details / Data / Schedules including offer letter duly signed and stamped are to be submitted in duplicate.

PRICE BID (COVER-II)

Tenderers may please note that price bid is to be submitted only in original copy of Tender i.e. Price bid (Part-II) issued by BHEL and no duplicate copy of same is required.

These Two separate covers i.e. cover I & II shall together be enclosed in a third envelope (Cover-III) and this sealed cover shall be superscribed with tender specification No., due date, time and submitted to officer inviting tender as indicated in tender notice on or before due date as indicated.



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DOMESTIC NOTICE INVITING TENDER

LAST DATE OF SALE : 20.11.2007 (12:30Hrs)

DATE OF OPENING (TECHNICAL BIDS) : 22.11.2007 (15:30Hrs)

NIT NO. / NAME OF WORK

TENDER NO.: DLI/PAN-1/R&M-C&I/07_083

Sealed tenders are invited from the contractors fulfilling qualifying requirements for the “R&M OF CONTROL & INSTRUMENTATION PACKAGE AND EXCITATION SYSTEM FOR 110MW UNIT-1 AT TAU DEVILAL TPS PANIPAT HARYANA”

NOTES

1. Purchase Preference will be given to CPSU as per Govt. Guidelines.
2. Please visit our website at www.bhel.com for details of NIT including Qualifying Requirements.

**DGM(SCT)
SAS-NOIDA**

1.0.4

PROJECT SYNOPSIS

M/S Haryana Power Generation Corporation Limited , a State Government Undertaking with head office at Panchkula , Haryana has entrusted BHEL for Renovation , Modernisation And Upgrading of Unit-1 from 110 MW to 117.8 MW at Panipat Thermal Plant. The existing unit of 110 MW is of BHEL make and new equipments are also being supplied by BHEL . The job involves dismantling of old C& I systems and installation and commissioning of newly supplied control and Instrumentation systems.

The site location is about 100 Km north of New Delhi on NH-1 called GT road. The nearest Railway station is Panipat and it is about 14 Kms from thermal plant. The nearest domestic airport is New Delhi at about 125 Km from site. The site is very well connected with road also.

All bidders are advised to visit site and see for themselves the conditions prevailing there. In addition Unit-2 was renovated 3-4 years back and almost similar modifications are to be done for Unit-1 also. Bidders can have good idea of job to be executed/ scope of work in Unit-1 by visiting unit-2 of Panipat Thermal Plant.

The maximum temperature attained is 47-48 degree C in May June every year and the minimum Temperature touches 4-5 degree C in December / January .

General Conditions of Contract

SECTION- I

GENERAL INSTRUCTIONS TO TENDERERS

1. This tender specification as a whole, furnishing all the details and other documents as required in the following pages, shall be duly signed and sent in a sealed cover (IN DUPLICATE) super-scribing the name of work as given in the tender notice.
2. The tender shall be addressed to : OFFICER INVITING TENDER AS INDICATED IN THE TENDER NOTICE.
3. Tenders submitted by post shall be sent as “**REGISTERED/ SPEED/ COURIER POST** “ and shall be posted with due allowance for any postal delay. The tenders received after the due date and time of opening are liable to be rejected. Offers received by Telegram/telex/ Fax/ E-mail/ Internet may be considered as per terms of NIT.
- 4 Tenders shall be opened at the time and date as specified in the tender notice in the presence of such of those tenderers or their authorized representatives who may be present.
- 5 The tenderers shall closely peruse all the clauses, specifications and drawings indicated in the Tender Documents before quoting. Should the tenderer have any doubt about the meaning of any portion of the Tender Specifications or find discrepancies / omission in the Drawings or the tender documents issued are incomplete or shall require clarification on any of the technical aspect, scope of work etc., he shall atonce contact the authority inviting the tender for clarification before the submission of the tender.
- 6 Before tendering, the tenderers are advised to inspect the site of work and the environments and be acquainted with the actual working and other prevalent conditions, facilities available, position of material and labour. No claim will be entertained later on grounds of lack of knowledge.
- 7 Tenderer must fill up all the schedules and furnish all the required information as per the instructions given in various sections of the tender specification. Each and every page of the Tender Specification must be SIGNED, STAMPED AND SUBMITTED ALONG WITH THE OFFER by the Tenderer in token of complete acceptance thereof. The information furnished shall be complete by itself.
- 8 The tenderer shall quote the rates in English Language and international numerals. These rates shall be entered in figures as well as in words. In case of difference in rates between words and figures THE LESSER OF THE TWO will be treated as valid rate. For the purpose of tender, the metric system of units shall be used.
- 9 All entries in the tender shall either be typed or be written in ink. Erasure and over writings are not permitted and may render such tenders liable to summary rejection. All cancellations and insertions shall be duly attested by the tenderer.
- 10 **QUALIFICATIONS OF TENDERERS** : Only tenderers who have previous experience in the work of this nature and description detailed in this tender specification are expected to quote for this work. Offers from tenderers who do not have proven and established experience in the field are not likely to be considered.
- 11 **DATA TO BE ENCLOSED** : Full information shall be given by the tenderer in respect of the following. Non submission of these information may lead to rejection of the offer.
 - 11.1 **FINANCIAL STATUS** : Financial viability as per proforma enclosed at **ANNEXURE-`A`**
 - 11.2 **INCOME TAX CERTIFICATES** : A Certificate of Income tax clearance from the appropriate authority in the forms prescribed authorize duly indicating annual turnover. These certificates

shall be valid for one year from the date of issue or for the period prescribed therein for all tenders submitted during the period.

11.3 **PREVIOUS EXPERIENCE** : A statement giving particulars (duly supported by documentary evidence) of the various service rendered in progress for each similar works by the tenderer indicating the particulars and value of each work, the site location, the duration, date of completion etc., strictly as per proforma enclosed at **ANNEXURE-B**.

11.4 **ORGANISATION CHART** : The authorized pattern that are totally available with him and that will be employed by the tenderer for this work in the form of monthwise and categorywise deployment plan duly indicating the number of Engineers, Supervisors, skilled and unskilled workers etc., as per proforma enclosed at **ANNEXURE-C**.

11.5 An attested copy of the **Power of Attorney**, in case the tender is signed by an individual other than the sole Proprietor, shall also be attached.

11.6 **IN CASE OF AN INDIVIDUAL** : His full name, experience, address and nature of business.

OR

IN CASE OF PARTNERSHIP FIRMS : The names of all the partners with addresses and their experience. A copy of the partnership deed/ instrument of Partnership duly certified by a Notary Public shall be enclosed.

OR

IN CASE OF COMPANIES : Date and place of registration including date of commencement certificate in case of public companies and the nature of business carried or by the Company. Certified copies of memorandum and Articles of Association are also to be furnished. Also indicate names, addresses and experience of the Directors.

11.7 A list of tools and tackles (including cranes, tractor-trailers, winches, Derricks, welding sets etc., wherever applicable) that the tenderer is having and those that will be deployed on this job as per proforma enclosed at **ANNEXURE-D**.

11.8 Analysis of unit rate quoted as per proforma enclosed at **ANNEXURE-E**.

11.9 Declaration sheet as per proforma enclosed at **ANNEXURE-F**.

11.10 In addition to the above, the particulars required elsewhere in tender documents.

11.11 Checklist and schedule of general particulars duly filled in, signed and stamped as per **ANNEXURE-G**.

NOTE : In terms of clauses 11.1 to 11.11 above, all the data required to be enclosed with the tender need to be furnished neatly typed, signed and stamped in the given formats only (in the form of separate sheets) failing which the tender may be considered as incomplete and is liable for rejection. Documentary proofs wherever necessary also need to be enclosed.

12 **EARNEST MONEY DEPOSIT** : Every tender must be accompanied by the prescribed amount of Earnest Money Deposit in any one of the following forms.

NOTE : Bank Guarantee, Cheques, Currency Notes, Money Orders or Postal Orders will not be accepted.

12.1 **Cash(As permissible under Income Tax Act)** : The amount should be remitted by the party to the Cashier of Bharat Heavy Electricals Limited and cash receipt issued by him shall be enclosed alongwith the tender.

12.2 Pay Order or Demand Draft in favour of Bharat Heavy Electricals Limited, Noida.

12.3 Tenders received without Earnest Money in full in the manner prescribed above will not be considered.

12.4 The Earnest Money Deposit of the successful tenderer will be retained towards part of Security Deposit.

12.5 In the case of unsuccessful tenderers, the Earnest Money will be refunded normally within fifteen days of acceptance of award of work by the successful tenderer.

12.6 BHEL reserves the right of **forfeiture of Earnest Money deposit** in case the successful tenderer,

(a). After opening of Tender, revokes his tender within the validity period or increases his earlier quoted rates.

(b) Does not commence the work within the period as per LOI/Contract. In case the LOI/Contract is silent in this regard then within 15 days after award of contract.

12.7 EMD shall not carry any interest.

12.8 Tenderers, who so ever desires, may deposit one time Earnest Money Deposit of Rs. 1,00,000/- in cash(**As permissible under Income Tax Act**) /DD/pay order only with the cashier of BHEL. Tenderers who furnish one time EMD as above, will not be required to

furnish EMD time and again alongwith their tenders submitted to BHEL/ PSNR. However they will be required to indicate the cash receipt No. and date of one time EMD in all their tenders.

13 AUTHORISATION AND ATTESTATION : Tenders shall be signed by persons duly uthorized / empowered to do so. Certified copies of such authority and relevant documents shall be submitted alongwith the tenders.

14 VALIDITY OF OFFER : *THE OFFER SHALL BE KEPT OPEN FOR ACCEPTANCE FOR A MINIMUM PERIOD OF SIX MONTHS FROM THE DATE OF OPENING OF TENDERS.* In case Bharat Heavy Electricals Limited calls for negotiations, such negotiations shall not amount to cancellation or withdrawal of the original offer which shall be binding on the tenderers.

15 EXECUTION OF CONTRACT: The successful tenderer's responsibility under this contract commences from the date of issue of the Letter of Intent by Bharat Heavy Electricals Limited. The successful tenderer shall be required to execute an agreement in the prescribed form as per **ANNEXURE-'I'** with the BHEL within a reasonable time after the acceptance of his tender and in any case before submitting the first bill for payment.

16 SECURITY DEPOSIT : Upon acceptance of tender, the successful tenderer must deposit the required amount of security deposit within the time specified in the Letter of Intent for satisfactory completion of work.

16.1 The total amount of Security Deposit shall be as follows :

- (a) In case of work costing upto 10 lakhs : 10% of the contract value.
- (b). In case of work costing above Rs 10 lakhs and upto Rs 50 lakhs : 1 Lakh + 7.5 % of the amount exceeding Rs. 10 Lakhs.
- © In case of work costing more than Rs 50 lakhs : 4 Lakhs + 5 % of the amount exceeding Rs. 50 Lakhs.

16.2 The Security Deposit will be deposited within 15 days from the date of issue of Letter of Intent but before start of work in any one of the following forms :-

- (a). The total Security Deposit as indicated in the Letter of Intent in **cash** (As permissible under Income Tax Act).
- (b) Pay Order, Demand Draft in favour of BHEL.
- c) Local cheques of scheduled banks, subject to realization.
- d) Securities available from Post Offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).
- e) Bank Guarantee 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 the other form of security. The Bank Guarantee format should have the approval of BHEL.
- f) 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.
- g) 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 be collected before start of the work and the balance 50% may be recovered from the running bills.
- h) EMD of the successful tenderer shall be converted and adjusted against the security deposit.

16.3 The security deposit shall not carry any interest.

NOTE: Acceptance of Security Deposit against Sl. No. (d) and (f) 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.

16.4 Security deposit shall not be refunded to the contractor except in accordance with the terms of the contract.

16.5 The validity of the Bank Guarantee furnished towards Security Deposit under (e) above shall be upto the period of completion of work as stipulated in the Letter of Intent + 1 month

and the same will be kept valid by proper renewal till the satisfactory completion of the Guarantee Period.

- 16.6 If the value of the work done at any time exceeds the accepted agreement value, the Security Deposit shall be correspondingly enhanced and the extra Security Deposit shall be immediately deposited by the Contractor or recovered from payments due to him.
- 16.7 Failure to deposit the Security Deposit within the stipulated time, may lead to forfeiture of Earnest Money Deposit and Cancellation of the award of work.
- 16.8 If any part of Security Deposit of the Contractor is held in the form of approved securities, it shall be kept transferred in the name of Bharat Heavy Electricals Limited, in such a manner that the same can be authorized fully without referring to the Contractor. BHEL shall not be responsible for any depreciation in the value of the Security while in BHEL's custody or for any loss of interest thereon.
- 16.9 BHEL reserves the right of **forfeiture of Security Deposit** in addition to other claims and penalties in the event of the contractor's failure to fulfil any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract. BHEL reserves the right to set off the Security Deposit, against any claims of any other contracts with BHEL.
- 16.10 **RETURN OF SECURITY DEPOSIT** : If the contractor fully performs and completes the work in all respects to the entire satisfaction of BHEL and presents an absolute "**No Demand Certificate**" in the prescribed form and returns properties belonging to BHEL taken, borrowed or hired by him for carrying out the said works, half the amount of Security Deposit will be released to the contractor after deducting all costs, expenses and other amounts that are to be paid to BHEL under this or other contracts entered into with the Contractor. It may be noted that in no case the Security Deposit shall be refunded / released prior to passing of final bill. Balance half of the amount of Security Deposit will be released only after the Guarantee Period is over.

NOTE : All the BGs are to be submitted as per BHEL/PSNR performa.

17 **No interest** shall be payable by BHEL on Earnest Money Deposit, Security Deposit or on any moneys due to the contractor.

18 REJECTION OF TENDER AND OTHER CONDITIONS :

- 18.1 The acceptance of Tender will rest with BHEL which does not bind itself to accept the lowest tender or any tender and reserves to itself full rights for the following without assigning any reasons whatsoever.
4. To reject any or all of the tenders.
- (b) To split up the work amongst two or more Tenderers.
- (c) To award the work in part.
 - (d) In either of the contingencies stated in (b) and (c) above to modify the time for completion suitably.
- 18.2 Conditional and un-witnessed tenders, tenders containing absurd or unworkable rates and amounts, tenders which are incomplete or otherwise considered defective and tenders not in accordance with the tender conditions, specifications, etc., are liable to be rejected.
- 18.3 If a tenderer expires after the submission of his tender or after the acceptance of his tender, BHEL may at its discretion, cancel such tender. If a partner of a firm expires after the submission of the tender or after the acceptance of the tender, BHEL may cancel such tender at its discretion unless the firm retains its character.
- 18.4 BHEL will not be bound by any Power of Attorney granted by the tenderer or by changes in the composition of the firm made subsequent to the execution of the contract. BHEL may, however, authorize such Power of Attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor concerned.
- 18.5 If the tenderer deliberately gives wrong information in his tender, BHEL reserves the right to reject such tender at any stage or to cancel the contract, if awarded and forfeit the Earnest Money/ Security Deposit/ any other moneys due.
- 18.6 Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the contractor who resorts to canvassing are liable to be rejected.
- 18.7 Should a tenderer or contractor or in the case of a firm or Company of contractors/ one or more of its Partners/ share holders / Directors have a relation or relations employed in BHEL, the authority inviting tender shall be informed to the fact alongwith the offer, failing

- this BHEL may, at its sole discretion reject the tender or cancel the contract and forfeit the Earnest Money/ Security Deposit
- 18.8 The successful tender should not sub-contract the part or complete work detailed in the tender specification without written permission of BHEL. The tenderer is solely responsible to BHEL for the work awarded to him.

18.9 NO DEVIATIONS to the tender conditions will be accepted.

SECTION – II GENERAL TERMS AND CONDITIONS

- 19.0 The following terms and expressions shall have the meaning hereby assigned to them except where the context otherwise requires.
- 19.1 **BHEL** (or B.H.E.Ltd.) shall mean Bharat Heavy Electricals Limited, a Company registered under the Indian Companies Act, 1956, with its Registered Office at BHEL HOUSE, SIRI FORT, NEW DELHI-110049 or its authorized officers or its Engineer or other employees authorized to deal with any matters with which these persons are concerned, on its behalf.
- 19.2 **GENERAL MANAGER** shall mean the Officer in Administrative charge of the contracting Unit of BHEL.
- 19.3 **ENGINEER** or **ENGINEER-IN-CHARGE** shall mean Engineer deputed by BHEL. The term includes Deputy General Manager, Construction Manager, Resident Manager, Site Engineer, Resident Engineer and Assistant Site Engineer of BHEL at the site as well as the officers in charge at Head Office.
- 19.4 **SITE** shall mean the place or places at which the plants/ equipment are to be erected and services are to be performed as per the specifications of this Tender.
- 19.5 **CLIENTS OF BHEL** or **CUSTOMER** shall mean the project authorities to whom BHEL is supplying the equipment.
- 19.6 **CONTRACTOR** shall mean the individual, firm or company who enters into contract with BHEL and shall include their executors, administrators, successors and permitted assigns.
- 19.7 **CONTRACT** or **CONTRACT DOCUMENT** shall mean and include the agreement, the work order, the accepted appendices of rates, Schedules of Quantities, if any, General Conditions of Contract, Special Conditions of Contract, Instructions to Tenderers, the drawings, the technical specifications, the special specifications, if any, the tender documents and the Letter of Intent/ Acceptance letter issued by BHEL. Any conditions or terms stipulated by the tenderer in the tender documents or subsequent letters shall not form part of the Contract unless specifically accepted in writing by BHEL in the Letter of Intent and incorporated in the Agreement.
- 19.8 **GENERAL CONDITIONS OF CONTRACT** shall mean the 'Instructions to Tenderers' and 'General Conditions of Contract' pertaining to the work detailed.
- 19.9 **TENDER SPECIFICATIONS** shall mean the Special Conditions, Technical Specifications, appendices, Site information and drawings pertaining to the work for which the tenderers are required to submit their offer. Individual Specifications Number will be assigned to each tender specifications.
- 19.10 **TENDER DOCUMENTS** shall mean the General Conditions of Contract (19.8) and Tender Specifications (19.9).
- 19.11 **LETTER OF INTENT** shall mean the intimation by a letter / telegram / telex / fax to the tenderer that the tender has been accepted in accordance with provisions contained in the letter. The responsibility of the contractor commences from the date of issue of this letter and all the terms and conditions of contract are applicable from this date.
- 19.12 **COMPLETION TIME** shall mean the period by date specified in the Letter of Intent or date mutually agreed upon for handing over the erected equipment/ plant which are found acceptable by the Engineer being of required standard and conforming to the specifications of the Contract.
- 19.13 **PLANT** shall mean and connote the entire assembly of the plant and equipment covered by the Contract.
- 19.14 **EQUIPMENT** shall mean all equipment, machineries, and materials, structural, electrical and other components of the plant covered by the Contract.
- 19.15 **TESTS** shall mean and include such test or tests to be carried out by the contractor as are prescribed in the Contract or considered necessary by BHEL in order to ascertain the quality, workmanship, performance and efficiency of the contracted work or part there of.

- 19.16 **'APPROVED', 'DIRECTED' or 'INSTRUCTED'** shall mean approved, directed or instructed by BHEL.
- 19.17 **'WORK' or 'CONTRACT WORK'** shall mean and include supply of all categories of labour, specified consumables, tools and tackles required for complete and satisfactory site transportation, handling, stacking, storing, erecting, testing and commissioning of the equipment to the entire satisfaction of BHEL.
- 19.18 **'SINGULAR' and 'PLURAL'** etc. Words carrying singular number shall also include plural and vice versa where the context so requires. Words importing masculine gender shall be taken to include the feminine gender and words importing persons shall include any Company or Association or Body of Individuals, whether incorporated or not.
- 19.19 **'HEADINGS'** The headings in these General Conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or the contract.
- 19.20 **'MONTH'** shall mean calendar month.
- 19.21 **'WRITING'** shall include any manuscript, type written or printed statement under the signature or seal as the case may be.

20 **LAW GOVERNING THE CONTRACT AND COURT JURISDICTION:** The Contract shall be governed by the Law for the time being in force in the Republic of India. The Civil Court at Delhi/ New Delhi, having ordinary Original Civil Jurisdiction shall alone have exclusive jurisdiction in regard to all claims in respect of this Contract.

21 **ISSUE OF NOTICE** The Contractor shall furnish to the Engineer, the name, designation and address of his authorized agent and all complaints, notices, communications and references shall be deemed to have been duly given to the Contractor, if delivered to the Contractor or his authorized agent or left at or posted to the address either of the contractor or his authorized agent and shall be deemed to have been so given in the case of posting on the day on which they would have reached such address in the ordinary course of post or at which they were so delivered or left.

22 **USE OF LAND** No land belonging to BHEL or its customer under temporary possession of BHEL shall be occupied by the Contractor without the written permission of BHEL.

23 **COMMENCEMENT AND COMPLETION OF WORK**

- 23.1 The contractor shall commence the work within the time indicated in the Letter of Intent and shall proceed with the same with due expedition without delay.
- 23.2 If the successful tenderer fails to commence the work within the stipulated time, BHEL, at its sole discretion, will have the right to cancel the contract. His Earnest Money and/ or Security Deposit will stand forfeited without any further reference to him without prejudice to any and all of BHEL's other rights and remedies in this regard.
- 23.3 All the works shall be carried out under the direction and to the satisfaction of BHEL.
- 23.4 The transported equipment, erected /constructed plant or work performed under the Contract, as the case may be, shall be taken over when it has been completed in all respects and/or satisfactorily put into operation at site.

24 **MEASUREMENT OF WORK AND MODE OF PAYMENT**

- 24.1 All payments due to the contractor shall be made by 'Account Payee' Cheques.
- 24.2 For progress/ running bill payments, the contractor shall present detailed measurement sheets in triplicate duly indicating all relevant details based on technical documents and connected drawings for the work done during the month/ period under different categories in line with terms of payment as per Letter of Intent. The basis of arriving at the quantities/ weights shall be the relevant documents and drawings released by BHEL. These measurement sheets shall be prepared jointly with Engineer and signed by both the parties.
- 24.3 These measurement sheets will be checked by the Engineer and quantities and percentages eligible for payment under different groups shall be decided by him. The abstract of quantities and percentages so arrived at based on the terms of payment shall be entered in the **Measurement Book and signed by both the parties.**

- 24.4 Based on the above quantities, contractor shall prepare the bills in the prescribed proforma and work out the financial value. These will be entered in the Measurement Book and signed by both the parties. Payment shall be made by BHEL after effecting the recoveries due from the contractor.
- 24.5 All recoveries due from the contractor for the month / period shall be effected in full from corresponding running bills unless specific approval from Competent authority is obtained to the contrary.
- 24.6 Measurement shall be restricted to that quantity for which it is required to ascertain the financial liability of BHEL under this contract.
- 24.7 Measurement shall be taken jointly by persons duly authorized by BHEL and the Contractor.
- 24.8 The Contractor shall bear the expenditure involved, if any, in making the measurements and testing of materials to be used/ used in the work. The Contractor shall, without extra cost to BHEL, provide all the assistance with appliances and other things necessary for measurement.
- 24.9 If, at any time due to any reason whatsoever, it becomes necessary to re-measure the work done, in full or in part, the expenses towards such remeasurement shall be borne by the Contractor.
- 24.10 Passing of bills covered by such measurements does not amount to acceptance by BHEL of the completion of the work measured. Any left out work has to be completed by the Contractor, as directed.**
- 24.11 Final measurement bill shall be prepared in the proforma prescribed for the purpose, based on the certificate issued by the Engineer that the entire work as stipulated in the tender specifications has been completed in all respects to the entire satisfaction of BHEL. The Contractor shall give unqualified 'No Claim' and 'No Demand' certificates. All the tools and tackles loaned to him should be returned in condition satisfactory to BHEL. The abstract of final quantities and financial values shall also be entered in the Measurement Book and signed by both the parties. The final bill shall be paid within a reasonable time after completion of the work. After the payment of final bill, only the guarantee obligation percentage value shall remain unpaid which shall be released in accordance with clause 32.
- 25 RIGHTS OF BHEL:** BHEL reserves to itself the following rights in respect of this contract without entitling the contractor to any compensation.
- 25.1 To get the work done through another agency at the risk and cost of the contractor, in the event of poor progress or the contractor's inability to progress the work for completion as stipulated in the contract, poor quality of work, persistent disregard of instructions of BHEL, assignment, transfer, subletting of the contracted work without written permission of BHEL, non-fulfillment of any contractual obligations etc. and to claim / recover compensation for such losses from the contractor including BHEL's supervision charges and overheads from Security Deposit/ other dues.
- 25.2 To withdraw any portion of work and / or to restrict / alter quantum of work as indicated in the contract during the progress of work and get it done through another agency and/ or by the departmental labour to suit BHEL's commitments to its customer or in case BHEL decides to advance the completion due to other emergent reasons/ BHEL's obligation to its customer.
- 25.3 To terminate the contract after due notice and forfeit the Security Deposit and recover the loss sustained in getting the balance work done through other agencies in addition to liquidated damages in the event of :
- (a) Contractor's continued poor progress.
 - (b) Withdrawal from or abandonment of the work before completion of the work.
 - (c) Corrupt act of the contractor.
 - (d) Insolvency of the contractor.
 - (e) Persistent disregard of the instructions of BHEL.
 - (f) Assignment, transfer, subletting of the contract work without BHEL's written permission.
 - (g) Non-fulfillment of any contractual obligations.
- 25.4 To recover any moneys due from the Contractor from out of any moneys due to the Contractor under this or any other Contract or from the Security Deposit.
- 25.5 To claim compensation for losses sustained including BHEL's supervision charges and overheads in case of termination of contract and to levy liquidated damages for delay in

completion of work, at the rate of ½% of the contract value per week of delay or part thereof subject to a ceiling of **10% of the contract value.**

- 25.6 To determine the Contract or to restrict the quantum of work and pay for the portion of work done in case BHEL's contract with its customer is terminated for any reason.
- 25.7 To effect recoveries from any amounts due to the contractor under this or any other contract or in any other form the moneys which BHEL is forced to pay to anybody due to contractor's failure to fulfil any of his obligations.
- 25.8 To restrict or increase the quantity and nature of work to suit site requirements, since the tender specification is based on preliminary documents and quantities furnished therein are indicative and approximate and the rates quoted shall not be subject to revision.
- 25.9 To deploy BHEL's skilled and semiskilled workmen in case of emergency / poor progress/ deficiency in skill on the part of the employees of the contractor and to recover the expenditure on account of the same from the moneys due to the contractor.
- 25.10 While every endeavor will be made by BHEL to this end, BHEL can not guarantee uninterrupted work due to conditions beyond its control. The Contractor will not be entitled to any compensation/ extra payment on this account.
- 25.11 In the event of any dispute of technical nature, the decision of BHEL shall be final and binding on the Contractor.

26 RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF LOCAL LAWS, EMPLOYMENT OF WORKERS, ETC.

The following are the responsibilities of the Contractor in respect of observance of local laws, employment of personnel, payment of taxes etc.:

- 26.1 As far as possible, unskilled workers shall be engaged from the local areas in which the work is being executed.
- 26.2 The contractor at all times during the continuance of this contract, shall in all his dealings with the local labour for the time being employed on or in connection with the work, have due regard to all local festivals, religious and other customs.
- 26.3 The Contractor shall comply with all State and Central Laws, Statutory Rules, Regulations, etc., such as The payment of wages Act, The Minimum Wages Act, The workmen's Compensation Act, The Employer's Liability Act, The industrial Disputes Act, The Employees' Provident Fund Act, Employees' State Insurance Scheme, the Contract Labour (Regulations and Abolition Act, 1970) and other Acts, Rules and Regulations for labour as may be enacted by the Government during the tenure of the Contract and having force or jurisdiction at site. The contractor shall give to the local Governing Body, Police and other concerned Authorities all such notice as may be required under law.
- 26.4 The Contractor, in the event of his engaging 20 or more workmen, will obtain independent license under the Contract Labour (Regulations and Abolition Act, 1970) from the concerned authorities based on the certificate (Form-V) issued by the principal employer/ customer.
- 26.5 The contractor shall pay all taxes, fees, license charges, deposits, duties, tolls, royalty, commissions or other charges which may be leviable on account of any of his operations connected with this contract. In case BHEL is forced to make any such payment, BHEL shall recover the same from the contractor either from moneys due to him or otherwise as deemed fit.
- 26.6 While BHEL will pay the inspection fees of the Boiler/ Electrical Inspectorate, all other arrangements for the periodical visits of Boiler/Electrical Inspector to site, inspection certificates etc. will have to be made by the contractor at his cost. The contractor will also meet all expenses in connection with his welder's qualification/ requalification tests etc.
- 26.7 The contractor shall be responsible for the provision of health and sanitary arrangements more particularly described in the Contract Labour (Regulations and Abolition Act, 1970) and safety precautions as may be required for safe and satisfactory execution of the contract.
- 26.8 The contractor shall be responsible for proper accommodation including adequate medical facilities for the personnel employed by him.
- 26.9 The contractor shall be responsible for the proper behavior and observance of all regulations by the staff employed by him.
- 26.10 The contractor shall ensure that no damage is caused to any person / property of other parties working at site. If any such damage is caused, it shall be the responsibility of the contractor to make good the losses and compensate them.

- 26.11 All the properties/ equipment/ components of BHEL/ its customer loaned with or without deposit, to the contractor shall remain the properties of BHEL/ its customer. The contractor shall use such properties for the purpose of execution of this contract. All such properties/ equipment/ components shall be taken to be in good condition unless notified to the contrary by the contractor within 48 hours. The contractor shall return them in good condition as and when required by BHEL/ its customer. In case of non-return, loss, damage, repairs etc., the cost thereof, as may be fixed by the Engineer, will be recovered from the contractor.
- 26.12 It shall not be obligatory on the part of BHEL to supply any tools and tackles or materials other than those specifically agreed to be given by BHEL. However, depending upon availability / possibility, BHEL/ its customer's equipment and other materials may be made available to the contractor on payment of hire charges as fixed by them , subject to the conditions laid down by BHEL/ its customer from time to time. Unless paid in advance, such hire and other charges shall be recovered from out of dues to the contractor or security deposit in one installment.
- 26.13 The contractor shall fully indemnify and keep indemnified BHEL/ its customer against all claims of whatever nature arising during the course of execution of this contract.
- 26.14 In case the contractor is required to undertake any work outside the scope of this contract, the amount payable shall be as may be mutually agreed upon.
- 26.15 Any delay in completion of works or non-achievement of periodical targets, due to reasons attributable to the contractor, will have to be compensated by the contractor either by increased manpower and resources or by working extra hours or more than one shift at no extra cost to BHEL.
- 26.16 The contractor shall execute the work under the conditions usual to such power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall cooperate and coordinate with other agencies at project site and proceed in a manner that shall help in the progress of work at site as a whole.
- 26.17 The contractor will be directly responsible for payment of wages to his workmen. A pay-roll sheet giving details of all payments made to the workmen duly signed by the contractor's representative should be furnished to BHEL, if called for.
- 26.18 In case of any class of work for which there is no specification laid down in the contract, such work shall be carried out in accordance with the instructions and requirements of the Engineer.
- 26.19 No levy, payment or charges made or imposed shall be impeached by reason of any clerical error or by reason of any mistake in the amount levied, demanded or charged.
- 26.20 ***No idle labour charges will be admissible in the event of any stoppage of work resulting in the contractor's workmen being rendered idle due to any reason at any time.***
- 26.21 The contractor shall take all reasonable care to protect the materials and the work till such time the plant / equipment has been taken over by BHEL / its customer.
- 26.22 Contractor shall not stop work or abandon the site for whatsoever reason or dispute, excepting for force majeure conditions. All problems / disputes shall be separately discussed and settled without effecting the progress of work. Stoppage or abandonment of work, other than under force majeure conditions, shall be treated as breach of work of contract and dealt with accordingly.
- 26.23 The contractor shall keep the area of work clean and shall remove the debris etc. while executing day-to-day work. Upon completion of work, the contractor shall remove from the vicinity of work, all scrap, packing materials, rubbish, unused and other materials and deposit them in places specified by the Engineer. The contractor will also demolish all the hutments, sheds, offices, etc. constructed and used by him and shall clean the debris. In the event of his failure to do so, the same will be arranged to be done by the Engineer and the expenses recovered from the contractor.
- 26.24 The contractor shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and timely execution shall be the essence of this contract. The contractor shall be responsible to ensure that the quality, assembly and workmanship conform to the dimensions and clearance given in the drawings and/ or as per the instructions of the Engineer.
- 26.25 The contractor shall furnish fortnightly labour deployment report indicating the classification and number of workmen engaged, date wise and category wise. Besides, the contractor

shall also furnish progress reports on work at regular intervals as required by the Engineer.

- 26.26 Contractor shall be solely responsible for all injury to persons, animals or things and for all damage to property to whomsoever it may belong which may arise from operations or neglect of his or of any of his sub-contractor or any of his sub-contractor's employees, whether such injury or damage arises from carelessness, accident or any other cause whatsoever in any case connected with the carrying out of this Contract. This clause shall be held to include, inter alia, any damage to building whether immediately adjacent to or otherwise and any damage to roads, footpaths, monuments or ways as well as all damage caused to the buildings or the works forming the subject of this cases of accidents and damages however caused and wherever occurring in execution of the contract, and shall make adequate arrangements to render all possible aids to the victims of all such accidents and damages.
- 26.27 Contractor shall indemnify Customer/BHEL in respect of all actions, suits, claims and demands brought or made against Owner by the workmen of Contractor or any other person or persons whomsoever in connection with the works or in respect of any matter or things done or omitted to be done by Contractor in the execution of or in connection with the works notwithstanding that all reasonable and proper precautions may have been taken by Contractor and against any loss or damage to Owner in consequence of any action or suit being brought against Owner for any thing done or committed to be done in connection with the execution of the work. The indemnity given by Contractor as aforesaid shall extend to making good all claims and demands arising out of losses/damages to property of every description and kind, the infringement of any legal right as well as injury or accident to any person resulting in death or otherwise.
- 26.28 Customer/BHEL shall have full power and right at his discretion to defend or compromise any suit or pay claim or demand brought or made against him as aforesaid whether pending or threatened, as he may consider necessary or desirable and shall be entitled to recover from Contractor all sums of money including the amount of damage and compensation and all legal costs, charges and compensation with any compromise or award which shall not be called into question by Contractor shall be final and binding upon him.
- 26.29 **INSURANCE AGAINST ALL RISKS:-**Contractor shall at his own expense maintain a third party insurance cover for 10% of the contract value till completion of the Contract. The policy shall cover all risk as defined below:-
The contractor is required to indemnify the customer/BHEL, in particular Contractor shall effect & maintain an insurance cover up to Rs.3 lac against injury/disability and Rs.5 lac in case of death per person /damage claims which may arise in respect of the work or in consequence thereof. Contractor shall also maintain an insurance policy against all claims which may be made upon customer/BHEL whether under the Workmen's Compensation Act or any other statute enforce during the currency of the contract or at common law in respect of any employee of Contractor or any subcontractor. All such insurance policies shall be in the joint names of customer/BHEL and Contractor and shall be deposited with BHEL. Contractor shall be responsible for anything which may be excluded from the insurance policies referred to above and also for all other damage to any property or persons out of land incidental to the negligence or defective carrying out of this Contract.

27 RESPONSIBILITIES OF CONTRACTOR IN RESPECT OF SAFETY OF MEN, EQUIPMENT, MATERIAL AND ENVIRONMENT.

- 27.1 All safety rules and codes applied by BHEL and its customer at site shall be observed by the contractor and his workmen without exception. The contractor shall be responsible for the safety of the equipment / material and work to be performed by him and shall maintain all lights, fencing guards, signs etc. or other protections necessary for the purpose. Contractor shall also take such additional precautions as may be indicated from time to time by the Engineer, with a view to prevent pilferage, accidents, fire hazards etc. Suitable number of clerical staff, watch and ward, store keepers to take care of equipment, materials, construction tools and tackles shall be posted at site by the contractor till the completion of the work under this contract. The contractor shall arrange for such safety devices as are necessary for this type of work and carry out the requisite site tests of handling equipment, lifting tools, tackles etc. as per usual standards and practices.

- 27.2 The contractor shall provide to its work force and ensure the use of the following personal protective equipment as found necessary and as directed by the authorized BHEL officials.
- 27.30 Safety Helmets conforming to IS-2925
(b) Safety Belts conforming to IS-3521
I Safety shoes conforming to IS-1989
(d) Eye & Face Protection devices conforming to IS-8520 and IS-8940
All tools, tackles, lifting appliances, material handling equipment, scaffolds, cradles, safety nets, ladders, equipment etc. used by the contractor shall be of safe design and construction. These shall be tested and certificate of fitness obtained before putting them to use and from time to time as instructed by authorized BHEL official who shall have the right to ban the use of any item.
- 27.4 All electrical equipment, connections and wiring for construction power, its distribution and use shall conform to the requirements of Indian Electricity Act and Rules. Only electricians licensed by the appropriate statutory authority shall be employed by the contractor to carry out all types of electrical works. All electrical appliances including portable electric tools used by contractor shall have safe plugging system to source of power and be appropriately earthed.
- 27.5 The contractor shall not use any hand lamp authorized by electric power with supply voltage of more than 24 volts. For work in confined spaces, lighting shall be arranged with power source of not more than 24 volts.
- 27.6 Where it becomes necessary to provide and / or store petroleum products, explosives, chemicals and liquid or gaseous fuel or any other substance that may cause fire or explosion, the contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in the relevant Government Acts, such as Petroleum Act, Explosives Act, petroleum and Carbides of Calcium Manual of the Chief Controller of Explosives, Government of India etc. Prior approval of the authorized BHEL official at the site shall also be taken by the contractor in all such matters.
- 27.7 The contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working, when natural daylight may not be adequate for clear visibility.
- 27.8 In case of a fatal or disabling injury / accident to any person at construction sites due to lapses by the contractor, the victim and / or his / her dependents shall be compensated by the contractor as per statutory requirements. However, if considered necessary, BHEL shall have the right to impose appropriate financial penalty on the contractor and recover the same from payments due to the contractor for suitably compensating the victim and / or his / her dependents. Before imposing any such penalty, appropriate enquiry shall be held by BHEL giving opportunity to the contractor to present his case.
- 27.9 In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover the cost of such damages from the payments due to the contractor after holding an appropriate enquiry.
- 27.10 In case of any delay in the completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the right to recover cost of such delay from the payments due to the contractor, after notifying the contractor suitably and giving him opportunity to present his case.
- 27.11 If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and / or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions regarding safety issued by the authorized BHEL official, BHEL shall have the right to take the corrective steps at the risk and cost of the contractor after giving a notice of not less than seven days indicating the steps that would be taken by BHEL.
- 27.12 The contractor shall submit report of all accidents, fires, property damage and dangerous occurrences to the authorized BHEL official immediately after such occurrence, but in any case not later than 12 hours of the occurrence. Such reports shall be furnished in the manner prescribed by BHEL. In addition, periodic reports on safety shall also be submitted by contractor to the authorized BHEL official from time to time as prescribed.
- 27.13 During the course of construction, alteration or repairs scrap lumbars with protruding nails, sharp edges etc., and all other debris including combustible scrap shall be kept cleared from working areas, passage ways and stairs in and around site.

- 27.14 Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck or permitted to strike each other violently. When cylinders are transported by powered vehicles, they shall be secured in a vertical position.
- 27.15 The contractor shall be responsible for the safe storage of his radioactive sources.
- 27.16 All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire fighting and shall be assigned specific fire protection duties. Enough number of such trained personnel must be available during the tenure of the contract.
- 27.17 Contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, erection site, other temporary structures, labour colony area etc. Access to such fire protection equipment shall be easy and kept open at all times. Compliance of the above requirement under fire protection shall in no way relieve the contractor of any of his responsibility and liabilities to fire accident occurring. In the event fire safety measures are not to BHEL's satisfaction, BHEL shall have option to provide the same and recover the cost plus incidentals from contractor's bills and / or impose penalty as deemed fit by the Engineer.
- 27.18 Before commencing the work, the contractor shall appoint /nominate a responsible officer to supervise implementation of all safety measures and liaison with his counterpart of BHEL.
- 27.19 If safety record of the contractor in execution of the awarded job is to the satisfaction of Safety Department of BHEL, issue of an appropriate certificate to recognize the safety performance of the contractor may be considered by BHEL after completion of the job.

28.0 CONSEQUENCES OF CANCELLATION

- 28.1 Whenever BHEL exercises its authority to terminate the contract / withdraw a portion of work under clause 25, the work may be got completed by any other means at the contractor's risk and cost provided that in the event of the cost of completion (as certified by the Engineer which shall be final and binding on the contractor) being less than the contract value, the advantage shall accrue to BHEL. If the cost of completion exceeds the moneys due to the contractor under the contract, the contractor shall either pay the excess amount demanded by BHEL or the same shall be recovered from the contractor. This will be in addition to the forfeiture of Security Deposit and recovery of liquidated damages as per relevant clauses.
- 28.2 In case BHEL completes the work under the provisions of this clause, the cost of such completion to be taken into account for determining the excess cost to be charged to the contractor shall consist of cost of materials purchased and / or labour provided by BHEL with an addition of such percentage to cover supervision and establishment charges as may be decided by BHEL.

29.0 INSURANCE

- 29.1 BHEL / its customer shall arrange for insuring the materials / property of BHEL / its customer covering the risks during transit, storage, erection and commissioning.
- 29.2 It shall be the sole responsibility of the contractor to insure his workmen against risks of accidents and injury while at work as required by the relevant Rules and to pay compensation, if any, to them as per Workmen's Compensation Act. The contractor shall also insure his staff against accidents. The work will be carried out in a protected area and all the Rules and Regulations of BHEL / its client in the Project Area which are in force from time to time will be followed by the contractor.
- 29.3 If due to negligence and/or non-observance of safety and other precautions, any accident / injury occurs to any other persons/ public, the contractor shall pay necessary compensation and other expenses, if so decided by the appropriate authority.
- 29.4 The contractor will take necessary precautions and due care to protect the material, while in his custody from any damage/ loss till the same is taken over by BHEL or customer. For lodging / processing of insurance claim the tractor will submit necessary documents. BHEL will reserve the right to recover the loss from the contractor, in case the damage / loss is due to carelessness / negligence on the part of the contractor. In case of any theft of material under contractor's custody, matter shall be reported to police by the contractor immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL for taking up with insurance.
- 29.5 If due to negligence/ carelessness on the part of the contractor, any material/ equipment gets damaged, the contractor shall submit necessary documents for lodging insurance claims

as required by BHEL Engineer. BHEL shall however reserves the right to recover deductible franchise and also unsettled portion of insurance claim amount from the contractor.

29.6 If due to negligence/ carelessness on the part of the contractor, any surrounding properties also gets damaged, the contractor shall submit necessary documents for lodging insurance claims as required by BHEL Engineer. BHEL shall however reserves the right to recover deductible franchise and to unsettled portion of insurance claim amount from the contractor.

29.7 The contractor may note that BHEL T&Ps / IMTEs are not insured. The Contractor will take necessary precautions and due care to protect the same while in his custody from any damage/ loss till the same is handed over back to BHEL. In case the damage / loss is due to carelessness/ negligence on the part of the contractor, the Contractor is liable to get them repair/ replaced immediately and in case of his failure to do so within a reasonable time , BHEL will reserve the right to recover the loss from the contractor.

30.0 STRIKES AND LOCKOUTS

30.1 The contractor will be solely responsible for all disputes and other issues connected with his workmen. In the event of contractor's workmen resorting to strike or the contractor resorting to lockout and if the strike or lockout so declared is not settled within a period of one month, BHEL shall have the right to get the erection work executed by employing its own men or through other agencies or both. The cost incurred by BHEL in this regard shall be recovered from the contractor.

30.2 For any purpose whatsoever, the employees of the contractor shall not be deemed to be in the employment of BHEL

31.0 FORCE MAJEURE

31.1 The following shall amount to force majeure conditions. Acts of God, Act of any Government, War, Sabotage, Riots, Civil Commotion, Police Action, Revolution, Flood, Fire, Cyclone, Earthquake and Epidemic and other similar causes over which the contractor has no control.

31.2 If the contractor suffers delay in the due execution of the contract, due to delays caused by force majeure conditions, as defined above, the agreed time for completion of the work covered by this contract shall be extended by a period of time equal to the period of delay, provided that on the occurrence of any such contingency, the contractor immediately reports to BHEL in writing the causes for the delay but the Contractor shall not be eligible for any compensation on this account.

32.0 **GUARANTEE** Even though the work will be carried out under the supervision of the Engineer, the contractor will be responsible for the quality of the workmanship and shall guarantee the work done for a period of twelve months from the date of completion of work as certified by the Engineer, and shall rectify, free of cost to BHEL, all defects arising out of faulty erection during the guarantee period starting from the date of completion of rectification. In the event of the contractor failing to repair the defective works within the time specified by the Engineer, BHEL may proceed to undertake the repairs of such defective works at the contractor's risk and cost, without prejudice to any other rights and recover the same from out of any moneys payable to the contractor or by other legal means.

33.0 **ARBITRATION** : All disputes between the parties to the contract arising out of or in relation to the contract, other than those for which the decision of the Engineer or any other person is by the contract expressed to be final and conclusive, shall after written notice by either party to the contract to the other party, be referred to sole arbitration of the General Manager or his nominee. The arbitration shall be conducted in accordance with the provisions of the Arbitration and Reconciliation Act, 1996. The parties to the contract understand and agree that it will be no objection that the General Manager or the person nominated as Arbitrator had earlier in his official capacity to deal directly or indirectly with the matters to which the contract relates or that in the course of his official duties had expressed views on all or any of the matters in dispute or difference. The award of the Arbitrator shall be final and binding on the parties to this contract. In the event of the

Arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason or his award being set aside by the Court for any reason, it shall be lawful for the General Manager or his successor, as the case may be, either to act himself as the Arbitrator or to appoint another Arbitrator in place of the outgoing Arbitrator in the manner aforesaid. The Arbitrator may, from time to time, with the consent of both the parties to the contract, enlarge the time for making the award. Work under the contract shall be continued during the arbitration proceedings. The venue of the arbitration shall be the place from which the contract is issued or such other place as the Arbitrator at his discretion may determine.

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ANNEXURE-A

FINANCIAL VIABILITY

1. Owner's capital in the business (incase of Partnership, please mention percentage shares and amounts).
2. Quantum of business done during last three financial years.
 - i) Rs.
 - ii) Rs.
 - iii) Rs.
3. Value of fixed Assets of the business in last three years.
 - i) Rs.
 - ii) Rs.
 - iii) Rs.
4. Guarantee limits (if any) enjoyed by the firm.
5. Over draft limits (if any enjoyed by the firm.
6. Please enclose audited profit and loss account and balance sheet for last 3 years (indicate no. of sheets).
7. Certificate from Scheduled Bank to prove Contractor's financial capacity to undertake the work duly indicating the financial limits the tenderer enjoys.

(Signature of tenderer)
With Stamp

NOTE:

All the above documents should be duly certified by auditors/ Bank as may be applicable.

ANNEXURE – B

ANALYSIS OF SIMILAR JOBS EXECUTED / IN PROGRESS

S.No.	Agency By whom Awarded	Location of project	Capacity & unit nos.	Scope of work	Date of award	Contract value
1	2	3	4	5	6	7

%age work completed and due date for completion	Date of completion if job is already over	No. of skilled/ unskilled workers deployed at peak	No. of Engrs.& Super- visors deployed at peak	Details of major T&P like cranes, Tractor Trailors, Winches, welding M/cs supplied		Consumables by whom
				By Con- Tractor	By other Agency	
8	9	10	11	12	13	14

(SIGNATURE OF TENDERER)
WITH STAMP

MONTHWISE MANPOWER DEPLOYMENT PLAN

S.No.	Category month)	No. of Person available on roll of the Orga- nasation	Month (Indicate No. of persons to be deployed in each						
			1st	2 nd	3 rd	4 th	5 th	6 th	and so on
1.									
2.									
3.									
Total									

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE – D

STATUS OF TOOLS & PLANTS AND IMTE

S.No.	Name of Equipment	Quantity owned	Registration no. wherever Applicable	Documents enclosed for proof of Ownership	Present Location	Quantity proposed to be deployed for this job
-------	-------------------	----------------	--------------------------------------	---	------------------	---

(B) MONTHWISE T&P DEPLOYMENT PLAN

S.No.	Description of T & P	Month							
		(Indicate No. to be deployed in each month)							
		1st	2 ND	3 rd	4 th	5 th	6 th	7 th	and so on

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE – E

ANALYSIS OF UNIT RATE QUOTED

S.NO.	DESCRIPTION	PERCENTAGE OF THE UNIT RATE QUOTED	REMARKS
-------	-------------	------------------------------------	---------

1. Salary & wages for staff & workers

- Consumables
- Gases

(b) Welding Electrodes

(c) I.P.O.L.

(d) Others

- Depreciation & maintenance for T&P
- Depreciation & Maintenance for other items
- Establishment and Administration expenses of site
- Overheads
- Profit

(SIGNATURE OF TENDERER)
WITH STAMP

DECLARATION SHEET

I, -----hereby certify that, all the information and data furnished by me with regard to this Tender Specification No.----- are true and complete to the best of my knowledge. I have gone through the specification, conditions and stipulations in detail and agree to comply with the requirements and intent of specification.

I, further certify that I am the duly uthorized representative of the under mentioned tenderer and a valid power of attorney to this effect is also enclosed.

Tenderer's Name & Address

Authorised representative's signature with name and address.

CHECKLIST AND SCHEDULE OF GENERAL PARTICULARS

NOTE : Tenderers are requested to fill in the following details and no column should be left blank

1. Name and address of the tenderer
2. Telegraphic/ telex address
3. Phone No. (Office)/ Fax No.
4. Name & designation of the official of the tenderer to whom all the references shall be made.
5. Tenderer's proposal No. & date
6. Whether EMD submitted (By cash/Pay order/ bank draft) by.....
7. Validity of offer/ rates quoted for six months from the date of opening of tender Yes/No
8. Financial Status as per Clause 11.1 (in the format as per Annexure-A) Yes/No
9. Income tax Clearance certificate as per Clause 11.2 Yes/No
10. Details of experience as per clause 11.3 (in the format as per Annexure-B) Yes/No
11. Monthwise & Categorywise manpower deployment plan as per Clause 11.4 (in the format as per Annexure-C) Yes/No
12. Attested copy of power of attorney as per clause 11.5 Yes/No
13. Details about type of the firm as per clause 11.6 Yes/No
14. Status of T&P and monthwise deployment plan as per clause 11.7 (in the format as per Annexure-D) Yes/No
15. Analysis of unit rate quoted as per Clause 11.8 (in the format as per Annexure-E) Yes/No

16. Declaration sheet as per clause 11. 09
(in the format as per Annexure-F)

Yes/No

Date _____

(SIGNATURE OF TENDERER)
WITH STAMP

WITNESS
(SIGNATURES WITH FULL PARTICULARS)

1.

2.

BANK GUARANTEE FOR SECURITY DEPOSIT

B.G. NO.

Date

This deed of Guarantee made this ----- day of -----two thousand by ----- (Bank) hereinafter called the “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 Electrical Limited (A Govt. of India Undertaking) a company incorporated under the Companies Act, 1956, having its registered office at BHEL House, Siri Fort, Asiad, New Delhi – 110049 through its unit at Power Sector – Northern Region, Noida, Distt. Gautam Budh Nagar, (UP) hereinafter called “The Company” (which expression shall unless repugnant to the context or meaning thereof by deemed to include its successors and assigns)

WHEREAS -----(hereinafter referred to as the Contractor) have entered into a contract arising out of Letter of Intent no.----- dt.----- (hereinafter referred to as “the contract”) for the construction of ----- with the company.

AND WHEREAS the contract inter-alia provides that the contractor shall furnish to the company a sum of Rs.----- (Rupees-----) towards security deposit for due and faithful performance of the contract in the form and manner specified therein.

AND WHEREAS the contractor has approached the Guarantor and in consideration of the arrangement arrived at between the contractor and the

Guarantor, the Guarantor has agreed to give the Guarantee as hereinafter mentioned in favour of the company.

The Guarantor do hereby guarantee to the company the due and faithful performance, observance or discharge of the Contract by the contractor and further unconditionally and irrevocably undertake to pay to the Company without demur and merely on a demand, to the extent of Rs.------(Rupees-----) -----) against any claim by the company on them for any loss, damage, costs, charges and expenses caused to or suffered by the company by reasons of the contractor making any default in the performance, observance or discharge of the terms, conditions, stipulations or undertakings or any of them as contained in the contract.

The decision of the company whether any default has occurred or has been committed by the contractor in the performance, 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 contractor 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 contractor 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.

The company shall have the fullest liberty without affecting in any way the liability of the Guarantor under this Guarantee, from time to time to vary any of the terms and conditions of the contract or extend time of performance by the contractor or to postpone for any time and from time to time any of the powers exercisable by it against the contractor and either enforce or forebear 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 reasons of time being given to the contractor or any other forbearance, act or commission on the part of the company or any indulgence by the company to the contractor or 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.

**The Guarantor further agrees that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the contract and its claim 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 contractor and accordingly discharges this Guarantee, subject however, that the company shall have no claim under this Guarantee after --
----- i.e. (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time, as the case may be) unless a notice of the claim under this Guarantee has been served on the Guarantor before the expiry of the said period in which case the same shall be**

enforceable against the Guarantor not withstanding the fact that the same is enforced after the expiry of the said period.

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

It shall not be necessary for the company to proceed against the contractor 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 Contractor shall at the time when proceedings are taken against the Guarantor hereunder be outstanding or unrealized.

Notwithstanding anything contained herein before, our liability under the Guarantee is restricted to Rs.----- (Rupees-----). Our guarantee shall remain inforce until -----, i.e. (the present date of validity of Bank Guarantee unless the date of validity of this Bank Guarantee is further extended from time to time) unless a claim or demand under this guarantee is made against us on or before ----- we shall be discharged from our liabilities under this Guarantee thereafter.

Any claim or dispute arising under the terms of this documents shall only be enforced or settled in the courts of at New Delhi / Delhi only.

The Guarantor hereby declares that it has power to execute this guarantee and the executant has full powers to do so on behalf of the Guarantor.

IN WITNESS whereof the ----- (Bank) has hereunto set and subscribed its hand the day, month and year first, above written.

Signed for and on behalf of the Bank

(Signatory No.-----)

WITNESSES

1. Name & Address

2. Name & Address

Notes :

- 1. The above BG shall be executed on the non-judicial stamp papers of adequate value procured in the name of the bank in the state where the bank is located.**
- 2. The above BG is required to be sent by the executing bank directly to BHEL at the address where tender is submitted / accepted under seal cover.**

LIST OF MEMBER BANKS

- | | |
|--|---|
| <p>1. State Bank of India</p> <p>CAG Branch,</p> <p>10th Floor, Vijaya Building,</p> <p>Barakhamba Road,</p> <p>New Delhi – 110001.</p> | <p>9. HDFC Bank Ltd.,</p> <p>5th Floor, HT House,</p> <p>K.G. Marg,</p> <p>New Delhi – 110001.</p> |
| <p>2. Canara Bank</p> <p>74, Janpath,</p> <p>New Delhi – 110001.</p> | <p>10. Citi Bank N A</p> <p>Jeevan Vihar Building,</p> <p>Sansad Marg,</p> <p>New Delhi – 110001.</p> |
| <p>3. Punjab National Bank,</p> <p>74, Janpath,</p> <p>New Delhi – 110001.</p> | <p>11. Standard Chartered Bank,</p> <p>H2 Block, Connaught Place,</p> <p>New Delhi – 110001.</p> |
| <p>3. Bank of Baroda,</p> <p>Corporate Banking Branch,</p> <p>11th Floor, BOB Building,</p> <p>Sansad Marg,</p> <p>New Delhi – 110001.</p> | <p>12. ICICI Bank Ltd.,</p> <p>ICICI Tower,</p> <p>Bisham Pitamah Marg,</p> <p>Pragati Vihar,</p> |

New Delhi – 110003.

State Bank of Hyderabad,

Surya Kiran Building, K.G. Marg,

New Delhi – 110001.

13. IDBI Bank Ltd.,

19, K.G. Marg,

Surya Kiran Building,

New Delhi.

5. State Bank of Mysore,

Antriksh Bhawan, K.G. Marg,

New Delhi – 110001.

14. HSBC Ltd.,

ECE House,

6. State Bank of Mysore,

28 KG Marg,

Industrial Finance Branch,

New Delhi – 110001.

18, Ramanashree Arcade,

M.G. Road, Bangaloe – 560001.

7. State Bank of Travancore,

Travancore House, IF Branch,

K.G. Marg, New Delhi – 110001.

8. Deutsche Bank,

Tolstoy Marg,

New Delhi–110001.

AGREEMENT

Agreement No. and Date _____
 Name of the Work _____

 Name of the Contractor with full address _____

 Value of work awarded _____
 Letter of Intent No. and Date _____
 Scheduled Commencement Date _____
 Scheduled Completion Date _____

THIS AGREEMENT MADE THIS _____ DAY OF _____ 2006 between BHARAT HEAVY ELECTRICALS LIMITED (A Government of India Enterprise) a Company incorporated under the Companies Act, 1956, having its Registered Office at BHEL House, Siri Fort New Delhi- 110049 (herein after called BHEL) of the ONE PART.

AND

M/S _____ (hereinafter called the `Contractor') of the SECOND PART.

WHEREAS M/s -----state that they have acquired and possess extensive experience in the field of -----

And Whereas in response to an Invitation to Tender No. ----- issued by BHEL for execution of ----- the contractor submitted their offer No.-----dated -----And whereas BHEL has accepted the offer of the Contractor on terms and conditions specified in the Letter of Intent No.-----dated ----- --read with the references cited therein.

THIS AGREEMENT WITNESSES AND it is hereby agreed by and between the parties as follows:

4. That the contractor shall execute the work of ----- and more particularly described in Tender Specification No ----- including Drawings and Specifications (hereinafter called the said works) in accordance with and subject to terms and conditions contained in these presents, instructions to Tenderers, General Conditions of Contract, Special Conditions, Annexures, Letter of Intent dated -----and such other instructions, Drawings, Specifications given to him from time to time by BHEL.
5. The Contractor is required to furnish to BHEL Security deposit in the form of cash/ approved securities/ Bank Guarantee valid upto ----- for a

sum of Rs.----- towards satisfactory performance and completion of the Contract.

6. The Contractor has furnished a Bank Guarantee bearing no.----- dated -----for a sum of Rs.-----executed by ----- in favour of BHEL towards Security Deposit valid upto -----

OR

The Contractor has furnished to BHEL an initial Security Deposit of Rs.-----in the form of cash / approved Securities/ B.G No.----- dated ----- for Rs.-----executed by ----- in favour of BHEL valid upto ----- and has agreed for recovery of the balance Security Deposit by BHEL @ 10% of the value of work done from each running bill till the entire security deposit is recovered.

OR

The contractor has furnished to BHEL an initial Security Deposit of Rs.----- (Rs.----- vide Bank draft No.-----dated -----and by adjusting EMD of Rs.-----submitted vide Bank draft No.----- dt.-----) and has agreed for recovery of balance Security Deposit by BHEL @ 10% of the value of work done from each running bill till the entire security deposit is recovered.

7. The Contractor hereby agrees to extend the validity of the Bank Guarantee for such further period or periods as may be required by BHEL and if the Contractor fails to obtain such extension(s) from the Bank, the Contractor, shall pay forthwith or accept recovery of Rs.----- from the bills in one installment and the contractor further agrees that failure to extend the validity of the Bank Guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum of Rs.-----.

OR

In case the contractor furnishes the bank guarantee at a later date the contractor hereby agrees to extend the validity of bank guarantee for such further period or periods as may be required by BHEL and if the contractor fails to obtain such extension(s) from the bank, the contractor shall pay forthwith or accept recovery of the amount of bank guarantee given in lieu of security deposit from the bills in one installment and the contractor further agrees that failure to extend the validity of bank guarantee or failure to pay the aforesaid amount in the manner specified above shall constitute breach of contract. In addition to above, BHEL shall be entitled to take such action as deemed fit and proper for recovering the said sum.

8. That in consideration of the payments to be made to the Contractor by BHEL in accordance with this Agreement the Contractor hereby covenants and undertakes with BHEL that they shall execute, construct, complete the

works in conformity, in all respects, with the terms and conditions specified in this Agreement and the documents governing the same.

9. That the Contractor shall be deemed to have carefully examined this Agreement and the documents governing the same and also to have satisfied himself as to the nature and character of the Works to be executed by him.
10. That the Contractor shall carry out and complete the execution of the said works to the entire satisfaction of the Engineer or such other officer authorized by BHEL, within the agreed time schedule, the time of completion being the essence of the Contract.
11. That BHEL shall, after proper scrutiny of the bills submitted by the Contractor, pay to him during the progress of the said works such sum as determined by BHEL in accordance with this Agreement.
9. That this Agreement shall be deemed to have come into force from ----- the date on which the letter of intent has been issued to the Contractor.
12. That whenever under this contract or otherwise, any sum of money shall be recoverable from or payable by the Contractor, the same may be deducted in the manner as set out in the General Conditions of Contract or other conditions governing this Agreement.
13. That all charges on account of Octroi, Terminal and other taxes including sales tax or other duties on material obtained for execution of the said works shall be borne and paid by the Contractor.
14. That BHEL shall be entitled to deduct from the Contractor's running bills or otherwise Income Tax under Section 194 I of the Income Tax Act, 1961.
15. That BHEL shall be further entitled to recover from the running bills of the Contractor or otherwise such sum as may be determined by BHEL from time to time in respect of consumables supplied by BHEL, hire charges for tools and plants issued (Where applicable) and any other dues owed by the Contractor.
14. That it is hereby agreed by and between the parties that non- exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents and the liability of the Contractor with respect to compensation payable to BHEL or Contractor's obligations shall remain unaffected.
16. It is clearly understood by and between the parties that in the event of any conflict between the Letter of Intent and other documents governing this Agreement, the provisions in the Letter of Intent shall prevail.

17. The following documents

18. Invitation to Tender No-----
and the documents specified therein.

19. Contractor's Offer No-----dated-----
----.

20. _____

21. _____

22. _____

6. Letter of Intent No _____ dated _____.

23. _____

shall also form part of and govern this Agreement.

IN WITNESS HEREOF, the parties hereto have respectively set their signatures
in the presence of

WITNESS

24. a valid Power of Attorney)

2.

WITNESS

1.

2.

(CONTRACTOR)
(to be signed by a person holding

(For and on behalf of BHEL)

SECTION – I (a)
SPECIFICATION
FOR
HEALTH, SAFETY AND ENVIRONMENT (HSE)

25. SCOPE

This specification establishes the Health, Safety and Environment (HSE) management requirement to be complied with by the Contractors during construction.

Requirements stipulated in this specification shall supplement the requirements of HSE Management given in relevant Act (s) / legislations, General Condition Contract (GCC). Special Conditions of Contract (SCC) and job specification where different documents stipulates different requirements, the most stringent be adopted.

26. REFERENCES

This document should be read in conjunction with following :

- 27. General Conditions of Contract (GCC)**
- 28. Special Conditions of Contract (SCC)**
- 29. Scope of work**
- 30. Relevant IS Codes (refer Annexure-I)**
- 31. Reporting Formats (refer Annexure-II)**

3.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE)
MANAGEMENT SYSTEM TO BE COMPLIED BY CONTRACTORS.

3.1 MANAGEMENT RESPONSIBILITY

- 3.1.1 The Contractor to comply with HSE requirement at Construction sites as enclosed to cover commitment of their organization to ensure health, safety and environment aspects in their line of operations.**
- 3.1.2 The HSE management system shall cover the HSE requirements including but not limited to what is specified under Para 1.0 and para 2.0 above.**
- 3.1.3 Contractor shall be fully responsible for planning and implementing HSE requirements. Contractor as a minimum requirement shall designate/deploy the following to co-ordinate the above :**
 - No. of workers deployed upto 250 – Designate one safety Supervisor**
 - Above 250 & upto 500 – Deploy one qualified and Experienced safety Engineer/ Officer**
 - Above 500 – One additional safety engineer/ (for every 500 or less) officer, as above.**
 - Contractor shall indemnify & hold harmless Owner/BHEL & their representatives free from any and all liabilities arising out of non-fulfillment of HSE requirement.**
- 3.1.4 The Contractor shall ensure that the Health, Safety and Environment (HSE) requirements are clearly understood & faithfully implemented at all levels at site.**
- 3.1.5 BHEL shall promote and develop consciousness for Health, Safety and Environment among all personnel working for the Contractor. Regular awareness programmes and work site meetings shall be arranged on HSE activities to cover hazards involved in various operations during construction.**
- 3.1.6 The Contractor shall arrange suitable first aid measures such as First Aid Box, trained personnel to give First Aid and install fire protection measures such as adequate number of steel buckets with sand and water to the satisfaction of BHEL/Owner.**
- 3.1.7 Non-Conformance on HSE by Contractor (including his Sub-contractors) as brought out during review / audit by BHEL/Owner representative shall be resolved forthwith by Contractor. Compliance report shall be provided to BHEL.**

- 3.1.8 The Contractor shall ensure participation of his Resident Engineer / Site-In-Charge in the Safety Committee / HSE Committees meetings arranged by BHEL / Owner. The compliance of any observations shall be arranged urgently. He shall assist BHEL / Owner to achieve the targets set by them on HSE during the project implementation.**
- 3.1.9 The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliance or continuous failure in implementation of any of HSE provisions, BHEL / Owner may impose stoppage of work without any Cost & Time implication to BHEL / Owner and / or impose a suitable penalty for non-compliance with a notice of suitable period, upto a commulative limit of 1.0% (one percent) of Contract value. This penalty shall be in addition to all other penalties specified else where in the contract. The decision of imposing stoppage of work, its extent & minority penalty shall rest with BHEL / Owner & binding on the Contractor.**
- 3.1.10 All fatal accidents and other personnel accidents shall be investigated by a team of Contractor's senior personnel for root cause & recommended corrective and preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to BHEL / Owner. BHEL / Owner shall have the liberty to independently investigate such occurrences and Contractor shall extend all necessary help and co-operation in this regard.**

3.2 HOUSE KEEPING

- 3.2.1 Contractor shall ensure that a high degree of house keeping is maintained and shall ensure interalia; the following :**
32. All surplus earth and debris are removed / disposed off from the working areas to identified locations (s).
 - b) Unused/Surplus Cables, Steel items and steel scrap lying scattered at different places within the working areas are removed to identified locations (s).
 - c) All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from work place to identified location(s).
 - d) Roads shall be kept clear and materials like : pipes, steel, sand boulders, concrete, chips and brick etc., shall not be allowed on the roads to obstruct free movement of men & machineries.
 - e) Fabricated steel structurals, pipes & piping materials shall be stacked properly for erection.
 - f) Water logging on roads shall not be allowed.
 - g) No parking of trucks/trolleys, cranes and trailers etc., shall be allowed on roads which may obstruct the traffic movement.
 - h) Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
 33. Trucks carrying sand, earth and pulverized materials etc., shall be covered while moving within the plant area.

In case of non-compliance of any of above, BHEL shall have the liberty to get it done from some other agency at this risk and cost.

3.3 HEALTH, SAFETY AND ENVIRONMENT

- 3.3.1 The Contractor shall provide safe means of access to any working place including provisions of suitable and sufficient scaffolding at various stages during all operations of the work for the safety of his workmen, and BHEL / Owner. Contractor shall ensure deployment of appropriate equipment and appliances for adequate safety and health of the workmen and protection of surrounding areas.**
- 3.3.2 The contractor shall ensure that all their staff and workers wear Safety Helmet and Safety shoes. Contractor shall also ensure use of safety belt, protective goggles, gloves etc., by the personnel as per job requirements. All these gadgets shall conform to relevant IS specifications or equivalent.**
- 3.3.3 The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health for driving of vehicles, handling**

and erection of material and equipments. All lifting equipments shall be tested certified for its capacity before use. Adequate and suitable lighting at every work place and approach there to, shall be provided by the Contractor before starting the actual operations at night. It is mandatory for contractor to get his workmen medically examined / checked for fitness of work assigned once a year and furnish the certificate to that effect from RMP / Govt. Hospital.

- 3.3.4 Hazardous and / or toxic materials such as solvent, coating or thinners shall be stored in appropriate containers.
- 3.3.5 All hazardous materials shall be labeled with the name of the materials, the hazards associated with its use and necessary precautions to be taken.
- 3.3.6 Contractor shall ensure that during the performance of the work, all hazards of the health of personnel, have been identified, assessed and eliminated.
- 3.3.7 Chemical spills shall be contained and cleaned up immediately to prevent further contamination.
- 3.3.8 All personnel exposed to physical agents such as ionizing or non-ionizing radiation, ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.
- 3.3.9 Where contact or exposure of hazardous materials could exceed limits or could otherwise have harmful effects, appropriate personnel protective equipment such as gloves, goggles, aprons, chemicals resistant clothing and respirator shall be used.
- 3.3.10 All persons deployed at site shall be knowledgeable of and comply with the environmental laws, rules & regulations relating to the hazardous materials substances and wastes. Contractor shall not dump, release or otherwise discharge or dispose off any such materials without the express authorization of BHEL / Owner.

4.0 DURING JOB EXECUTION

4.1 Implement Health, Safety and Environment requirements including but not limited to as brought out under para 3.0. Contractor shall ensure to :

- 34. arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.**
- 35. arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage of chemical / explosive materials and its use and implement all precautions mentioned therein.**
- 36. Submit timely the completed checklist on HSE activities, Monthly HSE report, accident reports, investigation reports etc., as per BHEL / Owner requirements. Compliance of instructions on HSE shall be done by Contractor and informed urgently to BHEL / Owner.**
- 37. Ensure the Resident Engineer / Site-Incharge of the Contractor shall attend all the Safety Committee / HSE meetings arranged by BHEL/Owner. In case of his absence from site that a second senior most person shall be nominated by him in advance and communicated to BHEL/Owner.**
- 38. Display at site office and work locations caution boards, list of hospitals, emergency services available.**
- 39. Display posters, banners made available by BHEL for safe working to promote safety consciousness.
- 40. Assist in HSE audits by BHEL / Owner and submit compliance report.
- 41. Generate and submit HSE records / report as per HSE plan.
- 42. Appraise BHEL / Owner on HSE activities at site.

RELEVANT IS – CODES FOR PERSONAL PROTECTION

IS: 2925-1984	Industrial Safety Helmets
IS: 4770-1968	Rubber gloves for electrical purposes
IS: 6994, 1973 (Part-I)	Industrial Safety Gloves (Leather & Cotton Gloves)
IS: 1989-1986 (Part I & III)	Leather safety boots and shoes
S: 3738-1975	Rubber knee boots
IS: 5557-1969	Industrial and Safety rubber knee boots
IS: 6519-1971	Code of practice for selections, care and repair of Safety footwear
IS: 11226-1985	Leather Safety footwear having direct moulding sole
IS: 5983-1978	Eye protectors
IS: 9167-1979	Ear protectors
IS: 3521-1983	Industrial Safety belts and harness

1.0 HEALTH, SAFETY & ENVIRONMENT (HSE) PLAN

PROJECT: ----- **CONTRACTOR :**-----

DATE :----- **OWNER :**-----

(To be prepared by each construction Agency)

ACTIVITY	PROCEDURE/	CODE OF	PERFORMING FUNCTIONS			AUDIT
DESCRIPTION	W.I/ GUIDELIES	CONFOR-	-----			FUNCTION
		MANCE	PERFOR-	CHECK-	APPRO-	CUSTOMER
			MER	ER	VER	REVIEW
AUDIT						REQUIREMENT

PREPARED BY

REVIEWED BY

APPROVED BY

(RESIDENT ENGINEER)

2.0 MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (1/6)

PROJECT:----- CONTRACTOR:-----

DATE :----- OWNER:-----

INSPECTION BY:-----

Note: Write 'NA' wherever the item is not applicable.

ITEM	YES	NO	REMARKS	ACTION
HOUSING KEETING				
Waste containers provided and used				
Sanitary facilities adequate and clean				
Passageways and Walkways Clear				
General neatness of working areas				
Others				
PERSONNEL PROTECTIVE EQUIPMENT				

Goggles: Shelds

Face protection

Hearing protection

Safety Shoes provided

Hand protection

Safety Belts

Others

EXCAVATIONS / OPENINGS

Openings properly covered or barricaded

Excavations shored

Excavations barricaded

Overnight lighting provided

Other

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.. 2/6)

ITEM	YES	NO	REMARKS	ACTION
WELDING, CUTTING				
Gas cylinders chained upright				
Cables and hoses not obstructing				
Screens or shields used				
Flammable materials protected				
Fire extinguisher (s) accessible				
Other				
SCAFFOLDING				
Fully decked platforms				
Guard and intermediate rails in place				
Toe boards in place				

Adequate shoring

Adequate access

Other

LADDERS

Extension side rails 1 m above

Top of landing

Properly secured

Angle + 70 from horizontal

Other

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.3/6)

ITEM	YES	NO	REMARKS	ACTION
HOIST. CRANES AND DERRICKS				
Condition of cables and sheaves OK				
Condition of slings, chains, hooks & eyes O.K.				
Inspection and maintenance logs maintained				
Outriggers used				
Signs/barricades provided				
Signals observed and understood				
Qualified operators				
Other				
MACHINERY, TOOLS AND EQUIPMENT				
Proper instruction				
Safety devices				
Proper cords				
Inspection and maintenance				
Other				
VECHICLE AND TRAFFIC				
Rules and regulations observed				
Inspection and maintenance				
Licensed drivers				
Other				

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.4/6)

ITEM	YES	NO	REMARKS	ACTION
TEMPORARY FACILITIES				
Emergency instructions posted				
Fire extinguishers provided				
Fire-aid equipment available				
Secured against storm damage				
General neatness				
In accordance with electrical requirements				
Other				
FIRE PREVENTION				
Personnel instructed				
Fire extinguishers checked				
No smoking in Prohibited areas				
Hydrants Clear				
Other				
ELECTRICAL				
Proper wiring				
ELCB's provided				
Ground fault circuit interrupters				
Protection against damage				
Prevention of tripping hazards				
Other				

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.5/6)

ITEM	YES	NO	REMARKS	ACTION
HANDLING AND STORAGE OF MATERIALS				
Properly stored or stacked				
Passageways clear				
Other				
FLAMMABLE GASES AND LIQUIDS				
Containers clearly identified				
Proper storage				
Fire extinguishers nearby				
Other				
			WORKING AT HEIGHT	
Erection plan				
Safety belts and lanyards; chute lines				
Other				
ENVIRONMENT				
Chemical and other Effluents properly disposed				
Cleaning liquid of pipes disposed off properly				
Water used for hydrotesting disposed off as Per agreed procedure				
Lubricant Waste/Engine Oil properly disposed				
Waste from Canteen, offices, sanitation etc., Disposed properly				
Disposal of surplus earth, stripping materials, Oily rags and combustible materials done Properly				

MONTHLY HSE CHECKLIST CUM COMPLIANCE REPORT (Contd.6/6)

ITEM	YES	NO	REMARKS	ACTION
Green belt protection				
Hygienic conditions at labour camps O.K?				
Availability of First Aid facilities				
Proper sanitation at site, office and Labour camps				
Arrangement of medical facilities				
Measures for dealing with illness				
Availability of Potable drinking water For workmen & staff				

Signature of Resident
Engineer with Seal

43. ACCIDENT CUM FIRE REPORT

(To be submitted by contractor after every accident within 24 hours of accident)

Report : _____

Name of Site: _____ Date: _____

CONTRACTOR _____

NAME OF THE INJURED _____

FATHER'S NAME _____

SUB-CONTRACTOR M/S _____

DATE & TIME OF ACCIDENT _____

LOCATION _____

BRIEF DESCRIPTION OF ACCIDENT

CAUSE OF ACCIDENT

NATURE OF INJURY/DAMAGE

MEDICAL AID PROVIDED/ACTIONS TAKEN

INTIMATION TO LOCAL AUTHORITIES

DATE:

SIGNATURE OF CONTRACTOR
WITH SEAL

TO: SITE-IN-CHARGE/BHEL

1 COPY

44. SUPPLEMENTARY ACCIDENT & INVESTIGATION REPORT

Project: _____ Supplementary to Report
No. _____

(Copy enclosed)

Site: _____ Date: _____

CONTRACTOR _____

NAME OF THE
INJURED _____
FATHER'S
NAME _____
SUB-CONTRACTOR
M/S _____
DATE & TIME OF
ACCIDENT _____
LOCATION _____

BRIEF DESCRIPTION & CAUSE OF ACCIDENT

NATURE OF INJURY/DAMAGE

COMMENTS FROM MEDICAL PRCTICETIONER, WHO ATTENDED THE
VICTIM / INJURED

SUGGESTED IMPROVEMENT IN THE WORKING CONDITION, IF ANY

LOSS OF MANHOURS AND IMPACT ON SITE WORKS

ANY OTHER COMMENT BY SAFETY OFFICER

DATE: _____ SIGNATURE OF CONTRACTOR
WITH SEAL

TO: SITE-IN-CHARGE/BHEL 1 COPY

**5.0 MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT
(To be submitted by each Contractor)**

Actual work start Date: _____ For the month of

Project: _____ Report
No. _____

Name of the Contractor: _____ Status as
on: _____

Name of Work: _____ Name of safety
officer _____

ITEM	THIS MONTH	CUMMULATIVE
Total Strength (Staff + Workmen)		

Number of HSE meetings organized at site

Number of HSE awareness programmes
Attended at site

Whether workmen compensation policy taken Y/N

Whether workmen compensation policy is valid Y/N

Whether workmen registered under ESI Act Y/N

Number of Fatal Accidents

Number of Loss Time Accidents (Other than Fatal

Other accidents (Non Loss Time)

Total No. of Accidents

Total man-hours worked

Man-hour loss due to fire and accidents

Compensation cases raised with Insurance

Compensation cases resolved and paid to workmen

Remarks

Date

Safety Officer/Resident Engineer
(Signature & Name)

45. SPECIAL CONDITIONS OF CONTRACT

46. SCOPE OF CONTRACT

The intent of this specification is to provide Renovation and modernization of C& I package of power plants . It includes dismantling of existing system (panels, cables, instruments etc),erection of new system/ panels/instruments and commissioning services for execution of projects according to most modern and proven techniques and codes. The mission of specific reference to any method and equipment or material necessary for the proper and efficient services towards installation of the plant shall not relieve the contractor of the responsibility of providing such services, facilities to complete the project or portion of project awarded to him. The quoted rate shall deem to be inclusive of al such contingencies.

47.The contractor shall carry out the work in accordance with instructions/drawings/specifications/standard practices supplied by BHEL from time to time.

48.Provision of all types of labour, Supervisors, Engineers, watch and ward as required, tools and tackles as required, consumables as required under various clauses of tender specification for handling transportation, erection testing and commissioning.

49.Proper out turns as per BHEL plan and commitment.

50.Completion of work in time.

51.Good quality and accurate workmanship for proper performance of equipment/systems.

52.Preservation of all components at all stages of pre-assembly/erection/testing and commissioning till unit is handed over.

53.FACILITIES PROVIDED BY BHEL/CUSTOMER:

54. Residential accommodation

Contractor has to make his own arrangements for the accommodation of his staff , workers , supervisors and engineers . All transport etc will also be arranged by contractor.

55.**OPEN SPACE :** Open space for building of temporary office shed and contractor's stores shed will be provided free of charge.

56.**ELECTRICITY:** For construction purpose, and for contractor's office and stores shed, electricity will be provided on chargeable basis. Contractor will arrange to install electricity meter on his own from the

concerned distribution agency of HPGCL at one point as per his load requirements and pay for the electricity consumed to the concerned agency/HPGCL/. All formalities including filling of forms , security money and other fees etc to be deposited is in scope of contractor . Further distribution from this point onwards will again be done by contractor himself. On completion of job contractor will arrange to get his all dues cleared and meter disconnected .

57.**WATER** : For construction and drinking purpose water at one single point will be provided free of charge. The contractor at his own cost shall arrange further distribution.

58.**TOOLS & TACKLES** : All the tools and tackles and IMTE'S required for the job will be arranged by the contractor. However, maxi termi tools and Maxi termi pins will be provided by BHEL, free of charge.

1.1.1.5 **CONSUMABLES:** All consumables, welding electrodes, oxygen, Argon, Gases, Paints, cable lugs, ferrules, cable ties, sleeves, nylon tapes, washers etc. required for erection, and cable terminations shall be arranged by contractor at their own cost. Double compression cable glands over and above of what is being supplied (Approximately 950 nos from 8 mm to 26 mm are being supplied along with materials) will be arranged by subcontractors if required .The cable gland used shall be of Ms COMET/COMEX and the Lugs shall be Dowell's make.

59.**SCAFFOLDING** : All temporary structures/scaffolding if any required for the erection work is also part of the scope and no separate payment will be made or it.

60. **FACILITIES TO BE PROVIDED AND DEVELOPED BY THE CONTRACTOR**

61.**CONTRACTOR OBLIGATION ON COMPLETION:** On completion of work all the temporary buildings, structures, pipelines cable etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL/customer at contractor's cost. In the event of his failure to do so, the expenditure towards clearance of it will be recovered from the contractor. The decision of BHEL engineer in this regard is final.

62.**TOOLS & TACKLES:** The contractor at his cost shall arrange all the tools and tackles required for the satisfactory execution of the work.

63.**CALIBRATION OF INSTRUMENTS:** Contractor will set up his laboratory at site for testing /calibration of field instruments. The laboratory will have all standard testing and calibration equipments required for the job. All the standard instruments, measuring tools , IMTE's etc are to be calibrated periodically as per the requirement of BHEL and necessary calibration certificates/test certificate are to be submitted to BHEL before use.

All field instruments will be calibrated before installation. If any instrument does not function properly in site and requires re-calibration , the same will be done by subcontractor without any extra cost to BHEL. Complete and Proper record of calibration will be maintained by the contractor. All

- calibrated field instruments will have stickers fixed on them displaying their set values and date of calibration.
64. **Supervisory Staff & workmen:** The contractor shall deploy experienced Engineers, supervisors, Skilled workmen like high pressure Welders, Riggers, Erectors, Fitters, Instrument Technicians and electricians in addition to the unskilled workmen. They shall hold valid certificates wherever necessary.
65. **Qualification of Staff :** The Supervisory Staff employed by the contractor shall be qualified Engineers and experienced in the area of work.
66. BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.
67. The work shall be executed under the usual conditions existing in major power plant construction and in conjunction with numerous other operations at site.
- 68. SCOPE OF WORK FOR MATERIAL HANDLING AND SITE STORAGE AND OTHER RESPONSIBILITIES :**
69. Contractor, on opening his site office will draw materials from stores and transport them to site for erection and installation. Smaller packages /loose materials will be kept in his safe custody. Contractor must make his own arrangements for Loading at stores, transportation to site and unloading at site. Contractor in his own interest is advised to maintain proper record of materials withdrawn from stores and materials erected at site. The stores assistant posted by the contractor should not be disturbed from the site till the site work is completed and material re-conciliation made with customer.
- 1.1.3.2 Handing over of spares to customer, excess materials if any left out, and dismantled materials (panels, cables instruments etc) to customer scrap yard is contractor's responsibility. Contractor must make his own arrangements for Loading at site , transportation to scrap yard and unloading there. It shall be the contractor's responsibility to receive the materials from stores , identify them and transport them for erection or store/stack them properly in the open/closed storage yard/shed. The materials shall be inspected and shortages/damages if any shall be reported to the site engineer of BHEL.
70. All the assistance required for lodging of Insurance claims, FIRs Arranging Material Gate Passes, Packing of defective materials etc. shall be carried out by Contractor.
71. Materials shall be issued to contractor based on the issue requisitions. The complete stores record like a Day Book Entry, Stock register and RIVs are to be maintained by them.

72. The contractor shall take delivery of the equipment /components from the stores after getting the approval of BHEL engineer on standard indent forms to be specified by BHEL. At periodic intervals of one month complete and detailed account of the equipment so erected shall be submitted to the BHEL engineer.
73. The contractor shall have the total responsibility for all the equipment and materials in his custody, stores, assembled or erected by him at site. Suitable security arrangements including employment of security personnel will be made by the contractor to ensure the protection of all materials/equipment and works from theft, fire, pilferage and any other damage or loss.
74. The responsibility for safe custody till the equipment are fully erected, tested and commissioned and taken over by BHEL's customer shall be with the contractor. The stolen/lost damaged goods shall have to be made good by the contractor.
75. All equipment shall be handled very carefully to prevent any damage or loss. The equipment from the storage yard shall be moved to the actual site of erection/location as per the direction of BHEL engineer.
- 76. PROGRESS OF WORK/QUALITY OF WORK:**
77. The contractor shall submit daily, weekly and monthly progress reports, man power reports, consumables report/and any other reports considered necessary by BHEL engineer.
78. Contractor shall ensure that the quality is maintained in all the works connected with this contract at all stages of the requirement of BHEL.
79. Contractors shall arrange for the inspection of works at various stages as required by BHEL. The contractors shall take immediate corrective action for the non-conformance if any observed and pointed by the BHEL.
80. The protocols between contractor and customer/BHEL shall be made prior to the installation for correctness of calibration, alignment etc.
81. Total quality is the watchword of the work and standards as per procedures laid down by BHEL. Any modifications suggested by BHEL/customer engineers shall be carried out without any extra cost to BHEL.

SECTION 2.0

2.1 LIST OF DRAWING.

Sl. No.	Description	Drawing No.	Total sheets
2.1	EXISTING CONTROL ROOM LAYOUT	Panipat – 1/415/001	1
2.2	PROPOSED CONTROL ROOM LAYOUT	Panipat – 1/415/002	1
2.3	HMI SYSTEM MAXDNA OGA	3-659 44 01025	6
2.4	OUTLINE GENERAL ARRANGEMENT (OGA) FOR STATIC EXCITATION EQUIPMENT	3 653 00 10882	10
2.5	OGA OF SAFE SHUT DOWN PANEL	016922	2
2.6	OGA OF DCS PANELS FOR SG AND BOP		8
2.7	SWAS PANELS DRAWINGS (ABB MAKE)	8413577	9

1. The drawings shall be a handed to the successful bidder; However for reference the bidders may visit Regional Service Centre Noida.
2. The typical sketch of tubing is enclosed for reference.

SECTION 3

SCOPE OF WORK

PANIPAT UNIT #1 (110 MW)-R & M
Section 3
SCOPE OF WORK

3.0. General:

3.0.1 The scope of work of R & M covered for the above project is classified as detailed below:-

- 3.0.1.1 Dismantling the existing panels of station C&I, SG controls system (FSS/BMS, SADC and APRDS), Generator excitation system, instruments, Turbovisory panel, associated field sensors, hardware like cables, Impulse lines, final elements etc. wherever required as detailed in BOM.
- 3.0.1.2 Modification of existing control desk, control panels, providing necessary cut outs in the control panel/desk, making floor cut outs for installation of panels (wherever required), modifying the existing impulse lines/erection of new impulse lines to match the new instruments wherever required.
- 3.0.1.3 Calibration, testing, erection, checking and commissioning of complete new equipment/instrument and hardware enumerated in the rate schedule for the following main systems/equipment as per BHEL Engineer instruction

- 1. Steam Generator Package panels for FSSS/BMS, SADC and APRDS
- 2. Station C & I System
- 3. Static excitation system
- 4. DAS/MMI system
- 5. Vibration/turbo supervisory monitoring system
- 6. Temperature, pressure and flow measurement in various system like Air and Flue Gas, Steam and Water, Oil system etc.
- 7. Control desk/measurement Instrument panel work.

3.0.1.4 **Removal of cables:** Most of the existing cables from field to control desk/panel, MCC to Panel/desk, MCC to Valves/dampers/actuators etc will have to be removed from old panels and cable trays to make space for the new cables which will be laid and terminated. If the existing cable trays are not sufficient new cable trays will be erected. Work involves identifying the cables, disconnecting the existing connection at both end of the cable and their removal from panel/tray , re-rolling and handing over to the customer store or its glanding/re-termination if cable is to be reused in new panel.

3.0.1.5 **Scope of work for Store Management:** Please refer to clause 1.1.3

3.0.1.6 **BHEL Site office requirements :**

- 1. Contractor will arrange for one lap top computer and one desk top Computer with latest configuration and other peripherals like printers CD/DVD writer etc including their maintenance for use of BHEL staff during the entire site duration. Data card /USB port internet card for

- internet connectivity on desk top/lap top/mobile
2. Two number of internet enabled activated Mobile Phones for the entire site duration for use by BHEL staff.
 3. To Provide for One computer operator and one helper for the exclusive use of BHEL site office for the entire job duration.

3.02. SCOPE OF WORK IN GENERAL BUT NOT LIMITED TO THE FOLLOWING

- 3.0.2.1 **Scope :** Receiving materials from stores , verifying, identifying and transporting them to site for erection or storage of equipment/materials as the case may be including stores management is in contractor scope of work. Contractor must make his own arrangements for loading at stores, transportation to site for erection and unloading at site. Similarly all dismantled materials will be shifted to scrap yard by contractor. It includes technical assistance for checking and making the shortages/damage report after taking delivery from stores, transporting to site, erecting the equipment. Commissioning of all equipment and completing associated activities like, carrying out the tests as required, pre commissioning checks and commissioning, maintenance /defects attending up to time of the completion of the commissioning activities and handing over the unit to BHEL's Customer. Shifting of the already received materials from the existing stores to new stores area if required .
- 3.0.2.2 **Calibration:** Contractor shall calibrate, erect and commission all the equipment cabinets, instruments, cabling etc as per the sequence prescribed by BHEL at site.
- 3.0.2.3 **Certificates/Licenses:** All the necessary certificates and licenses required to carry out this work are to be arranged by the contractor expeditiously at his cost.
- 3.0.2.4 **Nature of Work:** The nature of work being renovation and modernization though all steps have been taken to assess the requirements to the extent possible. However, during the course of work, if some additional items other than what is specified are to be erected, the contractor shall do the dismantling in consultation with BHEL engineer. The contractor shall maintain proper records indicating the quantity of old materials re-used for this work. In case of shortage of any erection hardware like JB's, copper tubes, impulse lines, fittings, cables etc., the contractor shall try to use the old materials in consultation with BHEL Engineer/Customer.
- 3.0.2.5 **Old panels:** Some of the old panels listed in the BOM are to be removed. While removing care shall be taken to avoid damages to panels/instruments that are being retained. Before removing the panels, the contractor shall ensure disconnection of Power supply, control cables and identify them with proper tagging for future use with new panels.
- 3.0.2.6 **Erection of Panels :**
Some of the panels /panel shipments may have to erected after making suitable cut outs on the floor of control room/equipment room, civil works like chipping, preparation of cutouts etc. is included in scope of work of the contractor. The scope of installation includes fabrication of base frame, fixing of anti vibration pads, leveling, alignment, welding, drilling

of gland plates for cable entry and sealing of bottom entry with suitable compounds after completion of work. Please refer the OGA drawing for details.

3.0.3. Control desk modification work

3.0.3.1 SCOPE: The scope of work for control desk covered under Bill of material (BOM) involves following. The control deskwork comprises of two parts.

- Control desk (first part) comprising push button station and indicators of 48 x 48-mm size.
- Second part comprising of vertical panel with measuring instruments and alarm.

Control Desk: In the existing control desk, the old switches, indication lamps, push buttons, indicators etc may have to be removed along with the existing wiring . The new items have to be replaced after making suitable cutouts. The cutouts are to be made by sawing and fixing the new plates with reverting or with bolt/screws. After rewiring final painting of internal /external surface is to be carried out. Further some of the existing instruments have to be removed and re wired.

Vertical Part : Some of the the existing measuring instruments like recorders, indicators etc. may have to be removed along with the wiring. A new cut out shall be make in the vertical section (by sawing) to mount the newly supplied sheet steel instrument mounting plate. The plate shall be fixed using screws/bolts. New instruments/recorders if required shall be mounted in its respective cutouts and shall be wired for power supply and input/outputs. The removed materials shall be handed over to the customer.

3.0.4 DAS/HMI:

Making of partition (Top open only partition) for computer room within the control room is in the scope of subcontractor. The approx size is 4500x5800X3000 mm (WxDxH) .The contractor shall arrange for the required material like Glass, wood, Anodised aluminum doors, Gypsum board etc. The Glass Thickness to be used for this purpose shall be 6 mm. Existing partition of unit no -2 can serve as a model for unit-1. Contractor can visit site and have idea of BOM required for construction of above room /partition.

The quantity of panels and other equipment involved is indicated in the BOM

3.0.5. Instruments: Apart from the new instruments, some of the old instruments like transmitters, switches, recorder, thermocouples, RTDs etc may have to be checked for healthiness and proper functioning. The scope of work covers calibration, installation and commissioning of

- All types of transmitters.
- Thermocouples, RTDs, Pressure switches, temperature switches etc.
- Pressure/temperature gauges /Switches, DP gauges / switches
- Air filter regulators, E/P Convertors

- Mounting of position feed back transmitters for valves / limit/torque switches.
- FSSS instruments.

The scopes of work for transmitters includes fixing the instruments on the rack/supports along with manifolds, connection between manifolds and transmitters with SS tube, drain valves, associated fitting and clamps including fabrication of suitable canopies along with supports, racks for transmitters.

The scope of installation of Thermo-well includes seal welding of the same wherever required. If drilling grinding, tapping etc are required for mounting the instruments, the contractor as per instruction of BHEL Engineers shall carryout the same. No separate additional payment will be made for this.

3.0.6. **Cabling:** For new cables, the scope includes transporting the cable from stores, cutting the cable to the required route length, laying of cables, drilling of holes in the panels/JBs etc. fixing of cable glands and termination of cables. For carrying out maxi termination work contractor shall arrange trained electricians with adequate experience. Further air supply arrangement for using pneumatic tool shall be made by the contractor.

3.0.7. **Fabrication and erection of steel and painting :** Most of field instruments will be mounted in prefabricated racks being supplied to site. Contractor will carry out erection of prefabricated rack at site locations and then mount field instruments in rack. Impulse piping from different tapping points to instruments will be done by contractor. However for some of instruments like analysers, JB's etc local fabrications as per site requirements will be done. The contractor scope includes fabrication of base frames, support JB frame, enclosures, impulse pipe supports, cable tray supports etc wherever required as per instruction of BHEL engineer. Erection materials i.e. angles, channels of different sizes etc will be supplied by BHEL. The payment shall be made on tonnage basis for erection materials . It includes the painting of all steel structures such as frames/ fabrication work done at site, . All consumables like primers, paints, brush etc. are in the contractor scope of supply.

3.0.8. **TURBINE SUPERVISORY, UPS/DC and SWAS :**

3.0.8.1 **TURBINE SUPERVISORY:** The scope of work for turbine supervisory system include shifting of materials of place of installation, installation of panels (at local and Control room) Junction Boxes (JBs). The cabling scope includes the cabling between JB's to panels, between local panel to remote panel, and between remote panel to control desk. Erection and commissioning support to Sub vendor for the mounting, erection and commissioning of all the sensors, gear wheel mechanism and other support for commissioning of the system is also to be provided by the contractor. Work like making Brackets, mounting frames for sensors and modification in the existing system are to be carried out by the contractor with in the

quoted piece. The price shall be indicated separately for the removal of the existing system and installation of new system. Prior to the installation of the new system, the existing system is to be removed. The commissioning assistance is to be provided by the contractor.

3.0.8.2 **UPS/24V DC Supply** : The scope of work includes erection of UPS panels, Batteries and Charger and the associated cabling.

3.0.8.3 **SWAS** : Scope of work includes installation of sensors, erection of 4 nos. samples lines from root valve of each length 100 mm (approximate), wet and dry panels associated cabling and impulse line work.

3.0.8.4 **SWAS rooms Air conditioning erection along with associated items are also included in the scope of erection. (Air conditioner equipment is supplied by BHEL). Additionally partitioning of the existing SWAS room with glass, Anodised Aluminium frames/ doors etc are also to be carried out. The contractor shall arrange the required material like Glass, wood etc. The Glass Thickness to be used for this purpose shall be 6 mm. The room dimension are 4000 (L)x 3000 (W)x3000(H) mm. Partitioning may have to be made after the erection of the SWAS System. Commissioning assistance is to be provided by the contractor. SWAS Room will be similar to the one already made for Unit-2 at Panipat site. Contractor is advised in his own interest to visit site before submitting offer.**

3.0.9. **STATIC EXCITATION EQUIPMENT :**

Civil Construction of excitation room on the TG hall similar to Unit-2 excitation room (here Regulation panels and Thyristor panels will be housed in different rooms) is in scope of contractor . Lighting / Conduiting / wiring /Switch-boards fixing / etc is also to be carried out by contractor. Supply of all wooden glass/ aluminium partitions doors etc will be in scope of contractor. Contractor has also to arrange for supply and installation of air conditioning window type 2 Tx 6 nos (along with stabilizers) corresponding to 12-14 tones capacity of reputed make. Contractor is advised in his own interest to visit site to have an idea of existing unit-2 excitation room and Bill of materials before submitting offer.

Further the scope of work includes erection and commissioning of SEE system consisting of regulation panel, field flashing panel/ Field breaker panel, Thyristor cubicles, transformer cubicle, excitation transformer and modification in control desk. It also includes modification of existing 11KV Bus-duct for HT termination along with supply of 12 numbers 11 KV cable joining kits size 1x 300 Sq mm and 6.6 KV termination kits for 3Cx120/95 Sq mm . (For one no dummy load test cable) . The supply of cable glands/ferrules and lugs for all size cables is also included in the scope of the contractor. Contractor also has to arrange for HV testing kit for doing High voltage test on 11 KV and 6.6 KV cables after their HV

terminations. The panel dimensions are as per the OGA drawing attached . Civil cutouts to be made by cutting /chipping floor for placement of panels as per layout plan. Some of the loose supplied items switches , lamps, recorder etc will be mounted in Control room desk . It will involve the job of making cutouts of required sizes in existing control desk.

Making of Electronic earth pit for separate earthing for SEE is also included in the contractor scope and the necessary materials like earth electrode, charcoal and salt etc shall be arranged by the contractor.

3.0.10. **COMMISSIONING** : The scope of work in Pre-commissioning / commissioning/post-commissioning for various commissioning activities of the main plant are as referred below.

- Trial run of various equipments/loops/circuits .
- Light up of boiler for alkali boil out and steam blowing.
- Turbine barring gear and rolling
- Electrical testing and Synchronisation
- Coal firing and unit stabilisation
- Full load operation

When carrying out above activities , trial runs may have to be repeated till satisfactory results are obtained to the satisfaction of customer/consultant. The contractor shall co-ordinate with other agencies during the main plant commissioning to ensure successful commissioning of total plant. Contractor shall ear-mark separate manpower for various commissioning activities including cable continuity checking, signal conditioning and instrument charging and commissioning. The manpower shall not be disturbed or diverted.

The contractor shall provide all Instruments digital meters , meggers, continuity testers etc in adequate quantity for commissioning. Indicative list is enclosed in the end

Contractor will provide the following manpower exclusively for testing and commissioning work . This manpower will not be used for routine jobs, other activities at site . If the knowledge level of the staff provided for testing and commissioning is not found up to the mark , the contractor must replace it as per directions of BHEL engineer . In case the contractor fails to provide the required manpower , BHEL will deduct the payments beings made to contractor on Man-months basis against this head. Time of deployment of this team will be decided in consultation with BHEL engineer . Payments against this will start only after deployment and certification by BHEL Engineer.

- **Qualified and experienced Engineers C & I - 2 Persons.**
- **experienced Electricians - 2 Persons.**
- **experienced Instrument Technician 2 Persons.**

It is the responsibility of the contractor to arrange and complete all the testing, pre-commissioning and commissioning activities for the particular

equipment as per BHEL norms. All the above will be witnessed by the BHEL engineers and report signed jointly with BHEL/ Customer.

- 3.0.11. **TIME SCHEDULE:** The contractor has to mobilize his resources and work force within a week, from the date of LOI in such a manner that the entire electrical /C &I work covered in his scope is completed in FOUR MONTHS.

Time is the essence of the contract. The entire work is to be completed in four months time and this being a R & M job, timely mobilization of adequate and skilled manpower, is of utmost importance. As a matter of routine contractor will ensure that site work is continued on all Sundays and other holidays. In addition Where-ever required and as per directions of BHEL Engineer, the contractor will arrange for round the clock working to achieve milestone targets. Contractor should note this point very carefully as skilled and experienced Manpower in sufficient numbers will have to be arranged accordingly.

The work under his contract is deemed to be completed in all aspects only when all the components/equipment are erected and trial run, tested and commissioned and taken over by customer. The decision of BHEL in this respect shall be binding with the contractor.

During the tenure of contract, if BHEL is not satisfied with the progress of work BHEL has the right to withdraw any portion of work/balance work and get the same done either directly employing their own men or through other agency at contractor's risk and cost. Contractor shall not be entitled for any compensation whatsoever in this regard.

3.0.12 TERMS OF PAYMENT

- 1 The 'Engineer' will certify regarding the actual work executed in the measurement books and bills, which shall be accepted by the contractor in measurement book.
- 2 Contractor shall submit bills for the work completed under the specification, once in a month detailing work done during the month. The format for billing shall be approved by BHEL before raising invoices.
- 3 Subject to any deduction which BHEL may be authorized to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder:

I. 90 % of item rates will be on pro-rata basis as under:

(A) For Equipment / items such as Panels, Cable Trays, cable, JB, impulse pipe, tubing etc. where no calibration is required (as Per Rate Schedule)

- I. 10% of the item rate shall be payable on placement at site .
- II. 50% of item rate shall be payable on erection/ installation .
- III. 10% of item rate on testing, pre-commissioning on individual instruments.

- IV. 10% of item rate on testing, commissioning of the total loop /system.
- V. 10 % of item rate on pending point clearance/handing over

(B) For Instruments / items where calibration and testing is required (as Per Rate Schedule)

- I. 20% of the item rate on calibration and testing .
- II. 30% of item rate on erection / installation.
- III. 20% of item rates on individual device loop checking of instruments.
- IV. 10% of item rate on system loop checks, pre-commissioning checks by simulation / field calibration or with actual system operation.
- V. 10 % of item rate on pending points clearance/handing over to customer

NOTE:- Further percentage break up for payments against the above heads, if required, will be mutually discussed and finalized at site.

- 10% after the guarantee period.

The guarantee amount of the 10% of the total contract value (arrived on the actual quantity erected multiplied by the unit rate accepted) shall be paid after the guarantee period of 12 months. The guarantee period will commence from the date of handing over of the unit to customer or six months after the date of full load whichever is earlier, provided all erection, testing and commissioning works are complete in all respect. However, this 10% amount can be released against Bank guarantee from nationalized / Scheduled Bank valid for 12 months as aforesaid in the proforma of BHEL.

CONTRACTOR SHALL NOTE THAT PAYMENT FOR ALL RUNNING BILLS WILL BE RELEASED ONLY ON PRODUCTION OF A CERTIFICATE ISSUED BY SITE IN CHARGE THAT THE CONTRACTOR HAS FULFILLED ALL THE CONTRACTUAL & STATUTORY REQUIREMENTS. PAYMENTS SHALL BE MADE IN 30 DAYS TIME FROM THE DATE OF RECEIPT OF BILLS AT BHEL CHANDIGARH.

The payment for the first running bill will be released only after production of copies of following certificate.

- PF Registration /membership certificate
- Labour License
- Workmen Insurance Policy

SECTION 4
BILL OF MATERIAL

BILL OF MATERIAL

Bill of C & I materials of Panipat Unit #1 (R & M)

Sl.No.	Item/details	Unit	Qty.	Rate/unit	Total
1	DCS PANELS/FSSS/SADC /SOOT BLOWERS /RELAY LOGIC /SG PANELS. SIZE 750x800x2415 MM (WxDxH)	No.	48		
2	SAFE SHUT DOWN PANEL 1688X1100X2345 MM	No.	2		
3	RELAY PANELS	No.	0		
4	TRANSDUCER PANEL	No.			
5	UPS				
5.1	UPS PANELS	No.	3		
5.2	ACDB	No.	2		
5.3	Battery bank for UPS OR SMF battery	SET	1		
5.4	OR				
5.5	SMF-Battery	SET.			
5.6	By pass system	No.			
5.7	24 V DC system				
5.7.1	Charger and DCDB	No.	3		
5.7.2	SMF-Battery bank in rack	SET.	1		
5.10					
6	CONTROL DESK Modifications, details as per scope. (Scope includes mounting of following items in 6.1 to 6.3 including Cutting of required sizes in existing desk painting etc	No.			
6.1	Mounting of mosaic title consoles	No.	2		
6.2	Mounting and wiring of control desk items-push buttons, lamps, switches etc.	No.	5		
6.3	Mounting and wiring of MCB, fuses & fuse bases, relay & relay bases and associated terminal blocks	No.			
6.4	Installation of following loose supplied items in the control desk/panels. Work includes making cut outs, fixing of instruments, calibration, internal wiring.	No.			
6.4.1	Bar graph indicators	No.	5		
6.4.2	Recorders (pen & point)	No.	6		
6.4.3	Electrical meters, totalizers, digital indicators	No.	10		
6.4.4	EWLI	No.	2		
7	Instruments scope includes calibration, mounting , fixing , clamping , complete erection .canopy etc if required				
7.0	TRANSMITTERS directly mounted with canopy, E/P converters for pressure/level/DPT	No.	160		
7.1	Temp. element				
7.1.1	RTD	No.	185		

7.1.2	Thermo couple	No.	107		
7.1.3	Solenoid valves	No.	4		
7.1.4	Installation of (including welding of stubs) of thermo-well stubs	No.	292		
7.2	Pressure switches	No.	94		
7.3	Pressure gauges	No.	187		
7.4	Temp. Switches	No.	6		
7.5	Temp. gauges	no	248		
7.6	DP Switches/gauges	No.	6		
7.7	Level switches	No.	4		
7.8	Displacement level transmitter	No.	1		
8	SWAS SYSTEM (ABB make)comprises the following panels/systems.				
8.1	WET PANEL/ Dry panel size 2000x500 x2100 mm (WxDxH)	No.	2		
8.2	Primary rack etc 1200x500x1800 mm	No.	2		
8.3	CHILLER unit 100 % redundancy	No.	1		
8.4	Erection & commissioning of Air conditioner, Partitioning of existing SWAS room . The room dimension are 4000 (L)x 3000 (W)x3000(H) mm. The scope includes supply of Glass, Wood , Anodised Aluminium and the required carpentry work as per scope. Existing room will be modified /partitioned to accommodate new panels. Contractor may have a look at the room modified for unit -2 earlier. Similar portioning is to be done for unit-1 .	No.	1		
8.5	Fixing of prefabricated LIR racks.	Nos	70		
8.6	Conductivity Analyzers- 4 nos, PH analyzers – 3 nos, dissolved oxygen- 1 no, Silica analyzers – 1 no . The above analyzers are being supplied loose. These are to be mounted in the panels supplied and assistance is to be provided for its commissioning. Cables for these instruments are prefabricated.	nos	10		
9	HMI SYSTEM consisting of the following items 9.1 to 9.8	lot	1		
9.1	NETWORK PANEL size 800x800x2415 mm (WxDxH)	No	1		
9.2	PROGRAMMER STATION	No.	2		
9.3	MAX STORIAN PC WITH MONITOR	No.	2		
9.4	PRINTERS	No.	4		
9.5	Placement of PC and Printer tables in room size 1500x750x735 mm Godrej make	No	8		
9.6	MAX OPERATOR STATION	NO	4		
9.7	CRT desk size 5435x1195x824 mm	NO	1		
9.8	Placement of Other accessories, like UTP cables, Ethernet cables, Power distribution board,	Lot	1		

10	CO-monitor consisting of transmitter, Receiver, one number blower, junction box and PVC pipe to connect the blower to transmitter and blower to receiver. The weights of transmitter, receiver and blower are approx. 11Kg, 7Kg, 15Kg respectively. The CO monitor is to be mounted in the duct leading to Chimney at about 2 m height.	No.	2		
11	TRANSMITTER ENCLOSURE	No.			
12	Fabrication of local racks if required to accommodate various instruments	tons.	2		
13	Turbine supervisory system consisting of the following. The scope includes dismantling of existing pickups , erection of new pick ups , calibration in position etc				
13.1	Sensors for axial shift - 3nos, diff expansion- 6nos, Overall expansion -4 nos, eccentricity -3nos,	Nos	18		
13.2	Remote panel	No.	1		
13.3	Speed 3 nos, vibration 12nos,	No.	16		
13.4	Control desk items fixing (if required)	set	1		
13.5	Mounting of gear wheel mechanism	No.	1		
14	Erection and commissioning of following Analyzers-	No.	8		
	Flue gas analyzer/oxygen analyzer/opacity meters /SO2 Analyzer/Nox analyzer/CO Analyzer with accessories and standard calibration units /cylinders				
	Sub total-1				
15	Erection of impulse lines, cables, junction boxes, cable trays Impulse lines laying work includes provision of supports, routing, necessary branching with equal TEEs, reducers ,couplings , catch points, welding of root valves, socket welding and mounting with U clamps, hydraulic testing and painting work to include along with required welding consumables and paint, erection materials will be supplied. Welding should be carried out with qualified and certified welders. Refer installation schemes for instruments CE/415/PTPS/INS				
15.1	A 335 P22 ½" NB SCH 160	m	400		
15.2	A 312 SS 316 PIPE SCH160	m	200		
15.3	A 312 TP316 ½" NB SCH 40	m	300		

15.4	A 106 GR C ½” NB SCH 160	m	600		
15.5	A 106 GR C ½” NB SCH 80	m	2500		
15.6	A 106 GR C ¾” NB SCH 80	m	1700		
16	Structural Steel-fabrication, installation and painting	Ton	3		
	Impulse line E & C Charges Sub Total-2	meters	5700		
17	Laying and termination of Cables (armored / unarmored), copper conductor overall shielded including tagging, Ferruling, lugging and Glanding. Lugs , ferrules, tags, tying belts etc of reputed make are to be arranged by sub contractor. Glands will be supplied by BHEL. If the BHEL supplied glands quantities are not sufficient, contractor will arrange for double compressor glands of similar quality and makes as per sizes below				
17.1.	Comet/dowell make or any other standard make glands double compression type for cable sizes having overhaul cable diameter 9.5 mm to 15 mm	50			
	Glands for overhaul Cable dia.15.5 mm to 21 mm	15			
	Glands for overhaul Cable dia.21.5 mm to 27 mm	10			
	Glands for overhaul Cable dia.36 mm Cabel sizes 1Cx300 sq mm	25			
17.1.1	12Pair X 0.5 Sq.mm, FRLS, Unarmored	m	4500		
17.1.2	4Pair/6P/8P ,7/0.3 X 0.5 SQmm,650 V armored/ unarmoured, I/O, ATC	m	23000		
17.1.3	1Pair /2P X 0.5SQmm,FRLS Armored/unarmoured	m	50000		
17.1.4	Compensating cables/ TC cables	m			
17.1.5	K type 2 pair and 4 Pair, 0.5 Sq mm ARM T/ C extension cable	m	7000		
17.1.6	RX type 2 pair 0.5 sq mm ARM, T/C extension cable	m	500		
17.1.7	8Pair, KX type o.5 sq mm, T/C extension	m	1000		
17.4	Control cables, armored	m			
17.4.1	2C X 1.5/2.5Sq.mm, FRLS, HRPVC	m	13500		
17.4.2	4C X 1.5/2.5Sq.mm	m	850		
17.4.3	14C x 1.5/2.5Sqmm	m	750		
17.5	Power cables, aluminum/copper armored	m			
17.5.1	6C x 4Sq.mm	m	300		
17.5.2	3C x 6Sq.mm AI	m			
17.5.3	6C x 6Sq.mm	m	300		
17.5.4	1C x 16Sq.mm, FRLS, PVC	m	600		
17.5.5	4C x 25Sq.mm	m	300		
17.5.6	1C x 70Sq.mm, FRLS,PVC	m	700		
17.5.7	1C x 120Sq.mm, AI	m			
17.5.8	3C x 95Sq.mm, AI	m			

17.5.9	1C x 300Sq.mm, copper	m	500		
17.6.0	1C x300Sq.mm, Copper,	m			
17.7	Termination of LT power cable size 1c, 300 Sq mm including cost of lugs.	No	40		
17.7.1	1C x 120Sq.mm	No,			
17.7.2	1C x 300Sq.mm	No.			
17.7.3	1C x 630Sq.mm	No			
17.8	PRE FABRICATED CABLES WITH CONNECTORS (FOR SEE)Length of 20M				
17.8.1	Pulse cabling (prefabricated)	Runs	12		
17.8.2	Interconnecting cables (prefabricated)	Runs	3		
	Cabling Cost				
17.9	Termination of HT power cable including cost of HT termination kit. (Raychem make)//lugs	no	18		
17.9.1	XLPE, 1C x 300Sq.mm 11 kV,	m	150		
17.9.2	XLPE, 3cX 120 Sq mm	m	150		
17.9.3	If any additional cable/ gland/tray does not fall in any category , rates of next higher sized cable/gland/tray will be considered for payment				
17.9.4	GI Plica Conduit with fittings upto 1” size	25			
17.9.5	GI Plica Conduit with fittings more than 1” size	15			
	E&C Charges for cabling-sub total-3				
18	Junction boxes installation and fixing in field				
18.1	12-way	No.	80		
18.2	24-way	No.	80		
18.3	36 way	no	35		
18.4	48 way	no	35		
18.5	64 way	no	20		
	Junction boxes Erection Charges-sub total-4				
19	Impulse lines				
	GI pipes/copper tubing / SS tubing	Unit			
	2” NB	m	20		
	1” GI/SS/CS pipes	m	16		
	½ “ GI/SS/CS pipes	m	23		
20	6mm/ 8 mm tubing of CU/SS /CS	m	20		
22	Cable trays				
	Cable trays-perforated/ladder	Unit			
	50 mm-75mm-100mm	m	4500		
	75 mm	m			
	100 mm	m			
	150 mm	m	25		
	300 mm--450 mm	m	100		
	450 mm	m			
	600 mm	m	5		
	Cable trays-Ladder	m			
	300 mm	m	10		
	600 mm	m	5		

	Sub Total-5				
23	Installation and commissioning of Actuators -electrical /pneumatic along with P/I converters	No	40		
23.1	Servicing of existing Actuators	no	60		
	Sub Total-6				

Sl.No.	Item/details	Unit	Qty.	Rate/unit	Total
24	Electronic earth pit preparation for SEE and Station . C &I along-with all materials	no	3		
	Sub total-7				
25.	Rendering commissioning assistance by way of deployment of experienced and skilled team as per directions of BHEL engineer.				
	Engineers	Man-month	10		
	Electricians and Instrumentation fitters	Man-months	14		
	The composition of the team can be changed within the stipulated man-months as per site requirements				
26.	A) Providing one computer operator and one helper for BHEL site office for entire site duration	Man-months	8		
	B) Providing one lap top computer and one desk top computer with latest configuration and peripherals like DVD writer, printer etc along with its maintenance for the complete duration of job , Providing data internet card for internet connectivity, Providing 2 nos internet enabled activated mobile phones for the entire site duration for use by BHEL staff.	monthly	4		
27	A) Civil Construction of excitation room on the TG floor including cost of all materials bricks/iron etc. Supply and installation of Light fittings / conduiting / wiring /Switch-boards fixing etc. All glass doors , aluminum frames/ doors etc will be arranged by contractor. Room size is 10000x6000x5500 mm (LxDxH) with a partition in between Contractor may visit site to see unit -2 excitation room for size and bill of materials and other details	Lump sum	1		
	B) Contractor has also to arrange for				

	supply and installation of air conditioning window type 2 Tx 6 nos corresponding to 12 tonnes capacity of reputed make i.e Blue star/Hitachi/Voltas/General/Marshall along with stabilisers.	no	6		
28	Supply and making of glass and aluminium partition for MMI & Computer room (within the control room) size 4500x5800x3000 mm including supply of glass , wood , aluminum frames etc . Contractor may visit site to see unit -2 Computer room size and bill of materials and other details	Lump sum	1		
	Charges for items 25 to 28 – Sub total-8				
30	Static excitation system				
	Regulation panels/FB panel/FF panels size 1150x1200x2295 mm (WxDxH)	no	3		
	Thyristors panels size 680x1200x2295	no	3		
	Dry type Transformer on wheels with Cubicle size 2850x1500x2550	No	2		
	Control room/ desk - fixing of loose items	set	1		
	High voltage test kit arrangement and HV test of HV cables	no	6		
	SEE panel erection and commissioning charges-Sub total-9				
31	Dismantling, removal and shifting of materials and handing over at stores /customer				
	Description	Unit	Qty.		
31.10	Panels dismantling				
	DDC panels	No.	25		
	Relay, MCC panels	No.	7		
	SEE Panels	No.	2		
	Turbine Supervisory equipment and related cables including panels	set	1		
	Removal of thermo-well stubs along with thermo-wells	no	25		
	Field Instruments dismantling				
31.11	Transmitters	No.	120		
	Pr. /Temp/DP Switches	No.	75		
	Gauges	No.	300		
	Removal of thermo-well stubs along with thermo-wells	No.	175		
	Control room indicators, alarm windows, meters	No.	100		
	Recorders, totaliser, digital indicators	No.	24		
	PBs, lamps, switches	No.	150		

	Old ABB Consoles	No.	22		
31.2	Cables removal				
31.21	Removal of cables that are to be replaced Cables are to be removed from panels and cable trays				
31.22	Control cables of sizes 0.5/1.0/1.5/2.5 sq.mm	m	50000		
31.23	LT Power cable <3C x 120 mm	m	2000		
31.24	LT Power cable 3Cx 120>x<3C X 300mm	m	3500		
31.25	HT cable	m	200		
	Impulse lines	m	2500		
	Cable trays				
	Perforated up to 150mm	m	700		
	300, 450, 600 mm	m	500		
	Dismantling charges – Sub total-10				
	Summary of Estimation of R & M works at PANIPAT UNIT 1				
	Sub total-1				
	Sub total-2				
	Sub total-3				
	Sub total-4				
	Sub total-5				
	Sub total-6				
	Sub total-7				
	Sub total-8				
	Sub total-9				
	Sub total -10				
32	Total				
Note 1	<p>The quantity mentioned for installation are indicative and shall be used for arriving the rate for each item. The quantity is likely to vary by 15% -20 % on either side (+/-), as the job is R & M in nature. Hence the final settlement shall be done as per the actual installed/commissioned or dismantled as the case may be.</p> <p>Due to very nature of the job , there may be wide variations (in actual numbers/ meters) in case of items to be dismantled . Final payment will be made on the basis of actual numbers/running meters dismantled.</p> <p>Identification/classification of the items and quantity shall be certified by BHEL Site Engineer for billing purpose. In all such cases the BHEL engineer decision is final and binding.</p>				

Note 2	Civil construction is to be carried out for excitation room , Partition for computer room (within the control room) and partition for SWAS room within the existing room. Contractor is advised to visit site and to see Unit-2 for the sizes of rooms and other bill of materials required before submitting his quotation. The rates to be quoted shall include the building materials.
Note 3	Payments against glands will be made only if additional glands are to be arranged and supplied by contractor. If quantities supplied by BHEL are sufficient then contractor will not supply glands and as such no payment will be made against this item .
Note- 4	In the bill of material to be submitted with Technical bid, the rates should not be quoted. Contractor must quote for unit rates only where Quantities are mentioned only in Sealed Price Bid. Where no quantity is mentioned , rate need not be quoted.

General Notes:

1. In case of omission in quoting any rate, the evaluation will be done considering the highest quoted rate obtained against that item but the work, if awarded, will be on the lowest quoted rate obtained against that item.
2. The rate shall be entered in figures as well as in words. In case of difference in rates between words and figures, the lesser of the two will be treated as valid rate.
3. The bidders shall enter both 'Unit Rate' & 'Amount'. In case of any mismatch between 'Total Amount based on Unit Rate' & 'Total Amount as quoted', the lower of the two shall be considered for evaluation and award.

ANNEXURE – IIE

Indicative list of IMTEs to be arranged by the **CONTRACTOR** for **ELECTRICAL WORK**

Sl. No.	EQUIPMENT	QTY
1.	500 V / 1000V, (Hand operated) megger -----	1 No.
2.	2.5 KV and 5 kV (Main operated megger) -----	1 No.
3.	HV Test Kit 0 to 60 KV (100mA leakage current) -----	1 Set
4.	Digital Multimeters with current probe-----	4 Nos
5.	Tong Testers (various ranges)including mA Range -----	3 Sets
6.	Micro ohm meter with 100Amps DC Source-----	1 Set
7.	Motor checker -----	1 No.
8.	Millivolt drop test kit with 100 Amps source -----	1 No.
9.	Analog Multimeters -----	2 Nos
10.	Single / three phase variac -----	1 Each

Notes:

1. The above list of testing instruments / equipment required for testing / commissioning is only for guidance to contractor and not complete. Any other / additional testing instruments / equipment required for timely and satisfactory completion of job will also be arranged by contractor at his own cost.
2. Contractor must re-ascertain /recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration / deployment of IMTE's
3. Other terms and conditions regarding above items shall be as per clause no. 37 (Tools & plants / IMTEs).

ANNEXURE – IIF

**INDICATIVE LIST OF IMTES TO BE ARRANGED BY THE
CONTRACTOR FOR C & I WORK**

S.NO.	DESCRIPTION	RANGE	ACCURACY	QTY
1.	Dead Weight Tester	0-600Kg/cm ²	LC-0.5Kg/cm ²	01 Set
2.	Comparison test set (With Sub-standard Pressure gauges)	0-1 Kg/cm ² 0-4 k g/cm ² 0-6 Kg/cm ² 0-10kg/cm ² 0-25Kg/cm ² 0-60Kg/cm ² 0-250Kg/cm ² 0- 400Kg/cm ²	$\pm 0.25\%$ Lc-0.02Kg/cm ² -----do----- -----do----- -----do----- $+0.25\%Lc-0.25$ Kg/cm ² ! $1\pm 0.25\%Lc-1.0$ Kg/cm ² ! $\pm 0.25\%Lc-2.5$ Kg/cm ² ! $\pm 0.25\%Lc-2.5$ Kg/cm ² !	! 01 Set ! ! ! ! ! ! !
3.	Variable DC regulated (Electronic voltage source with digital indication).	0-30V DC	0.2%	1 No
4.	Oil bath with thermostat, Stirrer and sub-standard Glass Thermometers in Multiple ranges	0-300 Degree Cel.		1 set.
5.	Glass U tube mercury mano-meter with standard steel Scale having leveling arrangement.	0-760 mm		As per requirement
6.	Glass U tube mercury mano-meter with standard steel Scale having leveling arrangement.	0-1000 mm		As per requirement
7.	Vacuum pump unit	0 to (-) 1 bar	lc – 0.02 bar	1 No.
8.	mA/mV source with Digital display.	0-200 mA/200mV		01 No.

S.NO.	DESCRIPTION	RANGE	ACCURACY	QTY
9.	Rehostat	100 Ohm , 10 A		03 Nos.
10.	Precision Digital Multimeter	4-1/2 Digits		01 No.
11.	Digital multimeters	3-1/2 Digits		04 Nos
12	High temp. instrument Calibration kit	upto 600 deg.		1 No
13	Decade Resistance box	upto 10 L ohms		1 No
14	500 V / 1000V, (Hand operated) megger			1 No
15	Single phase variac	15 A		1 No.
16	hydraulic test pump	upto 250 Kg/mm2	+0.25 %	1 No.
17	Contunity testers		as per requirement.	
18	Intercom / telephone set for loop checking			1 No.

Notes:

1. The above list of testing instruments/equipment required for testing / commissioning is only for guidance to contractor and not complete. Any other / additional testing instruments/equipment required for timely and satisfactory completion of job will also be arranged by contractor at his own cost.
2. Contractor must re-ascertain /recheck range and accuracy of each IMTE from BHEL Engineer well in advance before arranging calibration / deployment of IMTE's.
3. Other terms and conditions regarding above items shall be as per clause no. 37 (tools & plants / testing & measuring instruments).

**CERTIFICATE OF DECLARATION FOR CONFIRMING THE KNOWLEDGE OF
SITE CONDITIONS**

We,.....

Hereby declare and confirm that we have visited the project site under the subject
namely,and acquired full knowledge and
information about the site conditions, wage structure, Industrial climate and total
work involved. We further confirm that the above information is true and correct
and we will not raise any claim of any nature due to lack of knowledge of site
condition.

**Place:
stamp)
Date:**

**Tenderers Name and Address
(Signature of the Tenderer with**

NON DISCLOSURE AGREEMENT
Memorandum of Understanding

BHEL PSNR is committed to Information Security Management System as per Information Security Policy.

M/s....., providing.....service to BHEL PSNR, Noida hereby undertake to comply with the following in line with Information Security Policy of BHEL PSNR;

- To maintain confidentiality of documents & information which shall be used during the execution of the Contract.
- The documents & information shall not be revealed to or shared with third party which shall not be in the business interest of BHEL PSNR.

(
M/s. BHEL, PSNR)

(
M/s.....)