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T E N D E R S P E C I F I C A T I O N S

TENDER NO. BHEL/NR/SCT/SALMA-HEP/615

FOR

"MATERIAL HANDLING OF ALL ITEMS, EXECUTION OF INFRASTRUCTURAL CIVIL WORKS AND ERECTION, TESTING, COMMISSIONING, TRIAL OPERATIONS & HANDING OVER OF FRANCIS TURBINES, GENERATORS AND THEIR AUXILIARIES, EXCITATION SYSTEMS ETC FOR 3x14 MW SALMADAM HYDRO POWER PROJECT, AFGHANISTAN"

PART I – TECHNICAL BID

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

ISO 9001-2000, ISO 14001 and OHSAS 18001 certified company
SubContract and Purchase Deptt.

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)
Phone: 0091-0120-2515476 / 2515464 / 2515479
Fax 091-0120-2515464 / 2515467
Email: sku@bhelpsnr.co.in / pshiv@bhelpsnr.co.in

TENDER NO. BHEL/NR/SCT/SALMA-HEP/615

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----------

INDEX

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TENDER NOTICE

Sealed tenders are invited from the contractors fulfilling qualifying requirements for the work of **"Material handling of all items, execution of infrastructural civil works and erection, testing, commissioning, trial operations & handing over of Francis Turbines, Generators and their auxiliaries, Excitation systems etc for 3x14 MW SALMADAM HYDRO POWER PROJECT, Afghanistan"**

TENDER NO. BHEL/NR/SCT/SALMA-HEP/615

QUALIFYING REQUIREMENTS:

1.0 Tenderers who wish to participate should have executed following works, within the preceding seven (7) years period reckoned as on the date of bid opening;
"Erection, testing & commissioning work of at least one Vertical Hydro Turbine Generator set of 10 MW or higher rating"

NOTES:

a) If the qualifying work is completed in the seven(7) year period specified above, even if it has been started earlier, the same will also be considered meeting the qualifying requirements.

b) The word "executed" means, tenderer should have achieved the progress specified above even if the total contract is not completed/closed.

'AND'

2.0 Tenderers should also have an average annual turnover of minimum of USD 0.77 Millions 'OR' INR 40 Millions during preceding three years (2005-06, 2006-07 and 2007-08). Bidders shall submit audited balance sheets and profit & loss account in support of same.

'AND'

3.0 Bidders selection is subject to approval of BHEL's customer for this work.

NOTES: **Tenderer should also undertake infrastructural works including construction of store shed, development of storage area and other scope as per tender specifications. This should be confirmed by the tenderer.**

(i) **The Tender Documents comprise of following;**

(a) General Conditions of Contract (GCC), Special Conditions of contract (SCC), Tender Notice, Project Synopsis, etc.

(b) General idea of weights (Annexure-I, Part-I), Table of Panels(Annexure-I, Part-II), Table of Panels (Annexure-I, Part-III), Billing Break Up (Annexure-A),Detailed Scope of

Work (Annexure –B) & Scope of construction of BHEL closed store (Sketch enclosed) (Annexure –C)

(c) Rate Schedule.

(ii) Tender Documents with complete details are hosted on BHEL's 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.

(iii) 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 04.05.*2009** on payment of Rs.1,000/- (non-refundable) either in cash or by crossed demand draft in favour of BHEL, NOIDA. Request for issue of tender document should clearly indicate Tender No. and work.

(iv) Tenders must be submitted to the undersigned 'OR' to Shri Kailash Arora, Sr. Asstt. 'OR' to Smt. Usha Kochhar, Sr. Astt. in Room No. 104, PSNR, NOIDA latest by **15:00 Hrs**. **on 05.05.2009**. Technical bids shall be opened at **15.30 Hrs. on 05.05.2009**. Tenders received after the due date & time shall be liable to be summarily rejected.

(v) Earnest Money Deposit (EMD): Refundable, Non-interest bearing **EMD** of Rs 2,00,000/- 'OR' **USD 4000** shall be deposited by Account Payee Pay Order 'OR' Demand Draft in favour of " Bharat Heavy Electricals Limited" payable at Delhi/NOIDA . Those bidders who have already deposited ' One Time 'EMD' of Rs. 2,00,000/- with BHEL, PSNR, NOIDA need not submit EMD with the present tender.

(vi) Tenders not accompanied with Full Earnest Money Deposit, as indicated above, will not be considered.

(vii) **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.**

(viii) BHEL reserves the right to accept or reject any 'OR' all tenders without assigning any reason whatsoever.

(ix) BHEL takes no responsibility for any delay/loss of documents or correspondences sent by courier/post.

(x) **BHEL reserves the right to go for a Reverse Auction instead of Opening the submitted sealed bid, which will be decided after technical evaluation. As such, the bidders should submit their best prices in the 'Sealed Price Bid'. However, bidders are required to confirm their acceptance of "General terms and conditions" governing RA specifically in their technical bid. The "General terms and conditions" governing RA are given in the SCC of the NIT. Bidders are also required to furnish following details in their techno-commercial bid, for this purpose (RA).**

Authorization of representative who will participate in the on line Reverse Auction Process;

1. Name and Designation of official
2. Postal Address (Complete)
3. Telephone Nos. (Land line & Mobile both)
4. FAX No.
5. E-mail address
6. Name of Place/State/Country, wherefrom he will participate in the RA

(xi) Unsolicited rebate/discount shall not be accepted after bid opening.

(xii) Purchase Preference will be given to Indian CPSUs as per Govt. Guidelines.

DGM/SCP

ISO 9001-2000, ISO 14001 and OHSAS 18001 certified company SubContract and Purchase Deptt.

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TENDER NOTICE - NEWSPAPER

SUBMISSION DATE ***: 05.05.2009 (15:00 Hrs.)***
OPENING DATE ***: 05.05.2009 (15:30 Hrs.)***

NIT NO. / NAME OF WORK
TENDER NO. BHEL/NR/SCT/SALMA-HEP/615 Sealed tenders are invited from the contractors fulfilling qualifying requirements for the work of "**Material Handling of all items, execution of infrastructural civil works and erection, testing, commissioning, trial operations & handing over of Francis Turbines, Generators and their auxiliaries, Excitation systems etc for 3x14 MW SALMADAM HYDRO POWER PROJECT, Afghanistan".**

NOTES:-

1. Purchase Preference will be given to Indian CPSUs as per Govt. Guidelines.
2. Please visit our website at www.bhel.com for complete details of the NIT.

DGM/SCP

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

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 'OR' Downloaded copy from website against this NIT 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 'OR' Downloaded copy from website.

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.

PROJECT SYNOPSIS

3 X 14 MW SALMADAM HYDRO POWER PROJECT
HERAT AFGANISTAN

M/S WAPCOS Ltd - WATER AND POWER CONSULTANCY SERVICES (INDIA) Limited has awarded a contract to BHEL for supply, transportation, storage and material handling at site, erection and commissioning of 3 x 14 MW Francis turbines, generators, transformers along with all the auxiliaries and BOP on a lump sum basis.

On the part of BHEL it has to create its own storage, residential and office facility at site. WAPCOS has given the land at site premises for development of office and stores and BHEL shall have to develop it for construction of office complex and stores facilities.

The Project, located near Chist-e-Sharif in Herat province in Afganistan is a surface Power House, by diversion of river Hari Rud through water conductor system located on right bank of river and is situated at 162 km east of Herat town, 9 km from Chist-e-Sharif and 2 km downstream of Salma Village on right bank of river at Lat 34deg 24'N and Long 63deg49'E. Chist-e-Sharif is a district Headquarter and a famous place of pilgrimage.. Nearest city is Herat where community services like post office, bank, police station, hospital , school, cranes on hire, vendors for DG sets, tools, etc. are available. There is Indian Counsulate at Heart.

The project area- Hari Rud river valley climate is typical of an arid or semi-arid steppe with cold and wet winters and dry and warm summers. The river basin is affected by the extra tropical wind systems moving from the west during the winter season, which is normally from October to March. These are cold weather systems, which invariably cause precipitation as snow even at low elevations. Sub zero temperatures prevail during this season in the basin upstream of the dam site.

Nearest airport is Herat. The international airport at capital city Kabul is connected to Herat by daily flights. Indian Airlines and Afgan Ariana Airlines are operating flights for New Delhi- Kabul- New Delhi.

The sea port of Bander -e- Abbas in Iran is presently the main gateway to Afganistan is about 1200 km away from the project site accessible via Kerman and Mashad in Iran and Islam Quilla and Herat in Afganistan

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 authorised 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 therefor 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 organisation 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. 2,00,000/- 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 authorised / 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.

(c). 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. 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 + 2 (TWO) months 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 realised 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.

(a) 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, recognise 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 normally be accepted. however, if the tenderer insists for certain deviations to the conditions, financial implication thereof shall be loaded to the quoted price for evaluating the tenderer's offer.

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 authorised officers or its Engineer or other employees authorised 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 terms 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, materials, structurals, electricals 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 authorised 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 authorised agent or left at or posted to the address either of the contractor or his authorised 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 authorised 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 1/2% 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.

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 it's work force and ensure the use of the following personal protective equipment as found necessary and as directed by the authorized BHEL officials.

(a) Safety Helmets conforming to IS-2925
(b) Safety Belts conforming to IS-3521
(c) Safety shoes conforming to IS-1989
(d) Eye & Face Protection devices conforming to IS-8520 and IS-8940
(e) Hand & body protection devices conforming to IS-2573, IS-6994, IS-8807 & IS-8519.

27.3 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, it's 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 energised 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 authorised 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 lumbers 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.

--x--x--

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 and tonnage	Date of award	Contract value
1	2	3	4	5	6	7

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

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE – C

MONTHWISE MANPOWER DEPLOYMENT PLAN

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

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE – D

(A) STATUS OF TOOLS & PLANTS

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)							
		Ist	2nd	3rd	4th	5th	6th	7th	8th 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		
2.	Consumables		
	(a) Gases		
	(b) Welding Electrodes		
	(c) P.O.L.		
	(d) Others		
3.	Depreciation & maintenance for T&P		
4.	Depreciation & Maintenance for other items		
5.	Establishment and Administration expenses of site		
6.	Overheads		
7.	Profit		

(SIGNATURE OF TENDERER)
WITH STAMP

ANNEXURE - F

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 authorised 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.

ANNEXURE - `G'

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 perAnnexure-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 clause11.7 (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.

ANNEXURE - H

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

1. State Bank of India
2. ABN AMRO Bank N.V.
3. Bank of Baroda
4. Canara Bank
5. CITI Bank N.A.
6. Corporation Bank
7. Deutsche Bank AG
8. HDFC Bank Ltd.
9. The Hongkong and Shanghai Banking Corporation Ltd.
10. ICICI Bank Ltd.
11. IDBI Ltd.
12. Punjab National Bank
13. Standard Chartered Bank
14. State Bank of Travancore
15. State Bank of Hyderabad
16. Syndicate Bank
17. Indian Bank
18. Oriental Bank of Commerce
19. Kotak Mahindra Bank Ltd.

ANNEXURE - I

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_____2000 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:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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 authorised by BHEL, within the agreed time schedule, the time of completion being the essence of the Contract.

8. 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.

10. 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.

11. 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.

12. That BHEL shall be entitled to deduct from the Contractor's running bills or otherwise Income Tax under Section 194 (C) of the Income Tax Act, 1961.

13. 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.

15. 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.

16. The following documents

1. Invitation to Tender No---------- and the documents specified therein.
2. Contractor's Offer No---------- dated----------.
3. _____
4. _____
5. _____
6. Letter of Intent No_____ dated_____.
7. _____

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

1.

2.

(CONTRACTOR)
(to be signed by a person holding
a valid Power of Attorney)

WITNESS (For and on behalf of BHEL)

1.

2.

SECTION – I (a)

SPECIFICATION

FOR

HEALTH, SAFETY AND ENVIRONMENT (HSE)

1.0 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.

2.0 REFERENCES

This document should be read in conjunction with following :

- General Conditions of Contract (GCC)
- Special Conditions of Contract (SCC)
- Scope of work
- Relevant IS Codes (refer Annexure-I)
- Reporting Formats (refer Annexure-II)

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

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 (for every 500 or less)	- One additional safety engineer/ 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 :

a) 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.

i) 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 :

- arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.

- 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.

- 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.

- 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.

- Display at site office and work locations caution boards, list of hospitals, emergency services available.

- Display posters, banners made available by BHEL for safe working to promote safety consciousness.

- Assist in HSE audits by BHEL / Owner and submit compliance report.

- Generate and submit HSE records / report as per HSE plan.

- Appraise BHEL / Owner on HSE activities at site.

ANNEXURE - I

RELEVENT 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
IS: 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

ANNEXURE – II

1.0 HEALTH, SAFETY & ENVIRONMENT (HSE) PLAN

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

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

(To be prepared by each construction Agency)

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

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 COMPLANCE 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 COMPLANCE 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 COMPLANCE 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				
Availbility of Potable drinking water For workmen & staff				

Signature of Resident
Engineer with Seal

3.0 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

4.0 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)

To: SITE-IN-CHARGE,BHEL

1 COPY

SPECIAL CONDITIONS OF CONTRACT

PART `A'

INDEX

SECTION III-A

3X14 MW SALMA DAM HEP (AFGANISTAN)

SPECIAL CONDITIONS OF CONTRACT

34.0 GENERAL SCOPE OF WORKS

A. Receiving and Unloading of consignments from the Trucks/Trailors/Containers arriving from BHEL manufacturing units and their suppliers (At Site).

B. Proper Stacking and Preservations of all the material.

C. Keeping records and status of all materials as per BHEL practices. Verification of all the material received by contractor. Prepare shortages/damaged reports if any.

D. Transportation of materials to the powerhouse/ valve house service bay or the pre assembly area as per site requirement and the instructions of site engineer.

E. Construction of temporary shelters on some of the special items as per the instruction of the site engineer.

F. Unloading and stacking of certain items in the service bay / work area with the help of EOT cranes / loading arrangement as per the instruction of BHEL engineer.

G. Proper House keeping and safe working.

H. Handing over of all the spares to customer at their stores.

I. Handling and Transportation of scrap from power house to WAPCOS stores / scrap yard as per the instructions of BHEL engineer

J. Re-conciliation of materials with BHEL and WAPCOS.

M Erection, Testing , Commissioning, trial operation and Handing over of all equipments covered in this tender.

N Development of storage area, construction of closed storage shed, office premises including Office equipments, furnishing and its maintenance. Furnishing and maintenance of residential flats & guest house at site including mess facilities at site as well as accommodation at Herat. Provision of DG set/sets of suitable capacity at all above places as well as at construction site.

O Providing Telephone, satellite communication, internet , computers & accessories with latest software both at site and at Herat.

P Providing sufficient illumination, fire fighting equipment, warning signs in and around the place of work

Q Supply and Maintenance of two vehicle at site and one vehicle at Herat for to and fro travel for BHEL staff and their vendors.

R Providing assistance for efficiency testing.

BHEL has been awarded the work of Design, Manufacture, supply, installation, erection, testing & commissioning of 3x14 MW SALMADAM HYDRO POWER PROJECT . The equipment consists of following along with mandatory and recommended spares

SNO	ACTIVITIES	QUANTITY
1	Turbine and Accessories	3
2	Main Inlet Valve and accessories	3
3	Digital Governing system and Accessories	3
4	HP and LP Compressed air system	1
5	Cooling water system	3
6	Drainage & Dewatering System	1
7	Generator and Accessories	3
8	Excitation System	3
9	Unit Control Boards	3
10	Electric overhead Travelling Cranes (75/ 15 T)	1
11	Segregated phase Bus duct, LAVT, NGC including steel structure	3
12	17.25 MVA Generator Transformers	3
13	6 MVA Oil filled Transformers	1
14	800 KVA Oil Filled Transformer	2
15	500 KVA Dry Cast Resin Unit Auxiliary Transformer	3
16	110 KV Swtchyard Equipments (5 bays)	1
17	20 KV Metal Clad vacuum Switch Gear	4
18	415 V Unit Auxiliary boards	3
19	415 V LT Boards	2
20	415 V Station Service Boards	2
21	415 V Switchyard distribution boards	2
22	415 V Dam Distribution Boards	2
23	220 V DC Batteries, Chargers, Distribution Boards	2
24	Central control unit, Interface panels, GPS based Synchronisation unit, Data communication equipments, Protection system	2
25	PLCC Equipment with 36 Telephones and 48 V battery station	1
26	Fire Fighting System (Power House)	1
27	Mulsifier System for Transformers	1
28	Fire Fighting System (cable spreading room and oil handling room)	1
29	Public address System for PH, Transformer area, Switch yard area,	1
30	Ventillation System and accessories	1
31	500 KVA emergency DG set	2
32	Electric Passenger Lift for 10 persons	1
33	Lubricating Oil Purifier	1
34	Insulation Oil Purifier	1
35	Lubricating Oil Purifier (Portable Unit)	1
36	Insulation Oil Purifier (Portable Unit)	1
37	Illumination System	1
38	Power, Control, Instrumentation cables, 24 KV XLPE, incl cable trays and accessories	3
39	Mechanical Work shop	1
40	Electrical Laboratory	1

These materials will be supplied from our manufacturing units located all over the country in India as well as from our vendors located both inland and overseas.

Approx. weight to be handled under this contract will be around **1900 MT.** Brief descriptions of different packages with their weights are tentative and indicated **under Annexure-I of this NIT.** The contractor has to handle whatever actual materials are dispatched for the project irrespective of any variations and payments shall be released for the actual gross tonnage handled.

Though most of the material is being planned to be made available at site well in time for erection requiring proper handling, verification and storage, however certain items may be delayed, requiring direct delivery at site for erection. In such cases contractor has to unload the material directly in powerhouse/ work place and verification to be carried out. Besides above, BHEL, entirely at its discretion may get unloaded / handle at any location in the premises of powerhouse, Items like Generator stator sectors, shafts, transformers or any other materials at the discretion of BHEL engineer and availability of space in powerhouse.

Note:

The scope of work consists of Infrastructural works, material handling, erection, testing and commissioning of all items dispatched from BHEL Manufacturing units and their vendors as detailed in clause 53 of this NIT. Erection of I stage embedment and foundation parts PG 201, erection of II stage PG 202 and subsequent erection, testing of Francis type turbines and generators and auxiliaries as detailed in clause 53. While Infrastructural works including construction of store shed and development of storage area and material handling work is expected to commence immediately, work of erection of I stage embedment and foundation parts PG 201, erection of II stage PG 202 and subsequent erection, testing of Francis type turbine and generator and auxiliaries will be taken up in phases depending on availability of fronts by customer. Bidders have to plan deployment of their resources accordingly.

Climatic conditions at site may not permit working during peak winter conditions. Round the clock working in three shifts may be necessary during balance period of the year.

Bidders are advised to note this, visit site and to quote accordingly. No additional charges/compensation will be paid by BHEL on this account.

34.1 The intent of this specification is to provide services for execution of project according to most modern and proven techniques and codes. The omission of specific reference to any methods, 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 work or portion of work awarded to him. The quoted/ accepted rates/ lumpsum price shall deem to be inclusive of all such contingencies.

34.2 The contractor shall carry out the work in accordance with standard practices/ codes / instructions / drawings/ documents/ specification supplied by BHEL/ Customer (M/s WAPCOS) partner from time to time.

34.3 The work shall conform to dimensions and tolerances given in various drawings and documents that will be provided during erection. If any portion of work is found to be defective in workmanship, not conforming to drawings or other stipulations, the contractor

shall dismantle and redo the work duly replacing the defective materials at his cost failing which the job will be carried out by BHEL by engaging other agencies/ departmentally and recoveries will be effected from contractor's bills towards expenditure incurred including BHEL's usual overhead charges.

34.4 Following shall be the responsibility of contractor and have to be provided within finally accepted rates / prices:

(a) Provision of all types of Skilled labour, Adequately qualified and experienced supervisors, Engineers, Watch and ward as required, Tools & plants, Calibrated IMTE equipment as specified and otherwise required for the work and consumables for storage, material handling, fabrication, erection, testing etc. for the entire scope under this contract.

(b) Proper out-turn as per BHEL plan and commitment.

(c) Completion of work as per Schedule given by BHEL.

(d) Good quality and accurate workmanship for proper performances of equipment to the satisfaction of BHEL/ CUSTOMER.

(e) Repair and rectification as per instruction of BHEL engineer.

(f) Preservation / Re-conservation of all components during storage/ erection till handing over.

(g) Keeping all the storage and erection areas neat and clean.

(h) Documentation and records (Films/Movies/Photographs) from embedment to evacuation

34.5 The contractor under this contract shall also provide free of cost services of skilled persons for a total period of 125 Man-months (MM) exclusively for use by BHEL. This manpower will be required for following services:

Highly skilled workers (Qualified computer operators) for office and stores work for 25 man months, skilled workers for office, colony, stores, maintaining material record for BHEL and non BHEL packages, helping in material identification and dispatch of BHEL T&P items as well as office and site closing, dispatch of material for 50 man months. Unskilled workers for office, colony/ stores for 50 manmonths.

Persons so deployed shall have to work in extended hours whenever required. Workmen provided as per the above provisions shall be fully trained and experienced in the nature of work for which they are deployed.

In case these services are not utilized for any reason whatsoever, fully or partly, or in case contractor fails to provide the services as indicated above BHEL may arrange for the services through other agencies at the risk and cost of the contractor/ recover from the contractor @ USD 300/per MM for highly skilled workers and @ USD 250/per MM for skilled worker and @ USD 200/per MM for unskilled worker.

34.6 BHEL-Power Sector (NR) is ISO 9001-2000, ISO 14001-1996, OHSAS 18001-1999, ISO 27001 and SA-8000 certified company. Quality of work, to customer's satisfaction and system requirements is the essence of these certifications. The contractor in all respects will organize his work, systems, environment, process

control documentation, tools, plant, inspection, measuring and testing equipments etc. as per instructions of BHEL engineer.

The contractor shall also comply with applicable legislation and regulations with regards to Health, Safety and Environmental aspects for minimizing risk arising from occupational health & safety hazards, controlling pollution and wastage. The Contractor will be responsible for Health, Safety & Environment management (HSE) at site for the construction activities to be carried out by them in accordance with requirements given under section I (a) of GCC and elsewhere in this tender document. The contractor, who is awarded the work, shall have to sign an MOU w.r.t implementation of HSE conditions with BHEL (Safe Work Practices).

Contractor shall arrange for following provisions of HSE.

1. Contractor has to maintain contact with local hospital having scanning and other ultramodern medical facilities and ambulance services on call required during emergency. The addresses of local hospital shall be prominently displayed.

2. Contractor has to ensure pre employment medical check for all staff and workers.

3. Contractor has to ensure that availability of adequate First Aid facilities with trained nurse at site for emergency purposes. The emergency set up should include but not limited to following;

- Male Nurse (in shifts) .
- Oxygen set up
- Breathing apparatus
- Eye wash facility
- Stretcher
- Trauma blanket
- Medicines.

34.7 The Contractor shall also comply with the "Model Rules For Health & Sanitary Arrangements which is **enclosed with this SCC (Annexure-VII)** and which is as per requirements given by BHEL's Customer M/s WAPCOS.

34.8 The contractor shall comply with following towards Social Accountability;

(a) The contractor shall not employ any employee less than 15 years of age in pursuant to ILO convention. If any child labour were found to have been engaged ,the Contractor shall be levied with expenses of bearing his education expenditure which will include stipend to substantiate appropriate education or employ any other member of family enabling to bear the child education expenditure.

(b) The Contractor shall abide by UN convention w.r.t Human Rights and shall be liable for Discrimation/Corporal punishment for failure in meeting with relevant requirements.

(c) The Contractor shall arrange potable drinking water to its employees & workers.

34.9 Tenderer may note that as the place of work is inside the PROJECT and being manned by Security/Safety Force of WAPCOS, all necessary system related to entry of men, vehicle & material, safety & security systems, work permit system etc. as applicable will have to be followed by the contractor.

34.10 The Contractor shall be fully responsible for accidents caused due to him or his agents or workmen's negligence or carelessness in regard to the observance of the safety requirements and shall be liable to pay compensation for injuries. **It may be noted that non-compliance to HSE requirements will result in penal action. In case of violations of safety requirements, the Contractor shall be liable for a penalty of 'TEN USD' for the first violation and 'TWENTY USD' for the subsequent violations.**

The amount towards penalties as above will be deducted from running bills of the Contractor. The amount so collected above will be utilized for supporting the safety activities at site. The decision of BHEL on above will be final and binding on the Contractor.

34.11 **Bidders may note that selection of subcontractors is subject to approval of customer.**

35.0 PRILIMINMARY & CIVIL WORKS

35.1 The contractor shall as a first field activity check all the foundations for the correctness of the same as per the drawings and satisfy himself in all respects such as location of foundations, absence of voids, **levels**, correctness of **bolt holes, pocket levels**, centre lines etc. and all measurements should be recorded and submitted to engineer **for approval** before erection.

35.2 Before starting erection job contractor shall ensure that area connected to his scope of work is sufficiently enclosed against ingress of dust and water and all debris have been cleared of from the floor to a designated area as per instruction of engineer. The contractor shall arrange to get the working area and surroundings cleared daily to ensure the dust free atmosphere **and free from seepage water** for working and shall maintain sufficient labour and general cleaning of work areas. Delay of work on this account will not be acceptable

35.3 The contractor shall cover all opening on floor and put temporary hand railing on all sides of the floor to avoid any accident to the working personnel.

35.4 Contractor shall fix up and maintain plates, supports for X & Y axis and elevation at different locations as required for each unit and **transfer the same from bench mark and XY axis given at one point by BHEL's client.** Joint protocol records for such benchmarks shall be got signed from BHEL's Engineer, customer's Supervisory and QA Engineer.

35.5 Once X-Y axis and elevation are fixed at different floors and protected marking for Other equipment's shall be transferred from these and joint protocol as above shall be got signed for each equipment or as required as per drawings.

35.6 All matching surfaces of components shall be well cleaned with cleaning agent and burrs shall be removed by filling and blue matched. Wherever necessary sealing/lubricating/anti-sieze compounds shall be applied as per recommendation of Engineer. Machining/grinding required for fitting of keys, pins, packers , dowels etc. shall be carried out by contractor.

35.7 The accuracy of all equipment/ instruments and their functioning shall be established before they are permitted for use on the job. If the Engineer doubts the accuracy of the precision tools, any time during erection, the contractor shall arrange the checking of tools/ equipment/ instruments at his cost.

35.8 All the works shall be performed to the lines, grades and elevations indicated on the drawings. The contractor shall be responsible to locate and layout the works. The

horizontal & vertical control points established by the engineer shall be used as datum for the works under this contract. Any work done without being properly located may be removed and dismantled by the Engineer at the contractor's expenses if the contractor refuse to do it.

35.9 The contractor shall create all the facility at storage site as per the tender scope of work for unloading the equipment its safekeeping and proper record and well protected. No material should be lying loose any where in the power house as well as stores .

35.10 De-watering in general will be carried out by M/s WAPCOS. However contractor has to take care of general cleanliness in his area of work. For area cleaning within the premises of his work, the cleanliness shall be the total responsibility of contractor. Contractor within his scope of work shall keep the separate gang of workers for cleanliness operations. If the area under the scope is found unclean, BHEL can take measures on its own for cleaning and deduct the amount so spent from the running bills of contractor.

35.11 Necessary civil works shall be provided by BHEL client. The dimensions & locations shall be checked by the contractor for their correctness as per drawings. Further, top elevation and axis/ centre lines of all the foundations shall be checked with respect to benchmark etc. During the civil works, contractor shall check for all the block-outs, dimensions as required in their various mechanical drawings for installation of components/ assemblies and help BHEL wherever required for checking. All minor adjustments of foundation level, dressing and chipping of foundation surfaces **up to 25 to 50 mm**, enlarging the pockets in foundations etc., and repair of same as may be required for the erection of equipment shall be carried out by the contractor within the finally accepted rates.

35.12 Besides above, any works required for safe and efficient operation of tools and tackles like grouting/ excavation/ casting of foundation/ anchor points for derricks, winches, guy ropes fastening scaffoldings etc. or any other temporary supports shall also be the contractor's responsibility. For these works all materials including cement/ steel and required facilities will have to be arranged by contractor at his own cost.

35.13 While on the job, care is essential to avoid too much chipping and resultant lowering of level. In case of excess chipping, contractor has to arrange additional packing plates as per requirements provided BHEL Engineer allows it. When required as per drawings/ manufacturing unit, the embedded sole plates shall be scraped and checked with Prussian blue to get the required contact with frames at no extra cost to BHEL.

35.14 The contractor shall ensure perfect matching of packer plates including scraping and blue matching with foundation by dressing the foundation, as well as perfect matching between the packer plates and the base plate of equipment to the satisfaction of BHEL Engineer.

35.15 The contractor shall provide his tool stores for special tools and instruments at a convenient place near to the working area.

35.16 All mechanical works of machine related to civil works including foundations, erection of chequered plates along with embedment in concrete including preparation of bolt holes will be in the scope of contractor.

35.17 WAPCOS will give to BHEL area approx. 3000 Sq. m. BHEL contractor shall develop open storage yard, fenced from all sides with entrance**,** construct closed storage shed. The closed storage shed shall cover an area of approx. 500 Sq. Mtrs. and approx. height is 5 Mtrs. (Write-up and sketch is enclosed). Contractor has to take over that area including open area for storage of plant material supplied by various manufacturing units of BHEL. BHEL/Customer shall provide the security arrangement at stores and powerhouse.

However, necessary watch and ward shall be the responsibility of the contractor for the items and equipments under his custody. Temporary works like soling of land and time to time upkeep of the storage area shall be the responsibility of the contractor.

36.0 CONSUMABLES

36.1 The contractor shall provide within finally accepted price, all consumables like gaskets for temporary work, gland packing, general purpose welding electrodes, filler wires, all gases (for inert, welding & cutting), soldering material, dye penetrants, radiography source, films, chemicals etc and other erection consumables such as tapes, jointing compound, grease, mobile oil, M-seal, Araldite, Parmali wood, petrol, CRC/ other cleaning agents, wooden sleepers, steel required for temporary works such as supports , packing , H&S , shims etc. hardware items, sealing compound required for completion of work. The consumables, which are supplied by manufacturing units along with plant material, shall be issued to contractor for subject work only. Contractor shall maintain proper records for all those consumables.

36.2 All the shims & gaskets which go finally as part of equipment shall be supplied by BHEL free of cost.

36.3 It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of consumables. Non availability of any consumable materials or equivalent suggested by BHEL cannot be considered as reason for not attaining the required progress or for additional claim.

36.4 It shall be the responsibility of the contractor to obtain prior approval of BHEL, regarding supplies of consumables such as welding electrodes/ filler wires/ gases lubricants etc. before procurement. On receipt of consumables at site these shall be subjected to inspection and approval by BHEL. The contractor shall inform to BHEL all details regarding type of consumable batch No. date of expiry etc. and produce test certificate for each lot/ batch with correlation of batch/ lot no. with respective test certificate. No consumable will be allowed to be used without valid test certificate.

36.5. Only special welding electrodes for the Turbine, Butterfly valves shall be supplied by BHEL. The contractor shall keep the record of the use for these electrodes. All other electrodes including special electrode if any shall have to be arranged by contractor. In case the electrodes supplied by BHEL are found to be inadequate/ unusable, contractor has to arrange the same from the market as per provisions of clause No. 36.4 within their quoted price for subject work.

36.6 BHEL reserves the right to reject the use of any consumable including electrodes, gases, lubricants/ special consumables if it is not found to be of the required standard/ make/ purity or when shelf life has expired. Contractor shall ensure display of shelf life on consumable wherever required and records maintained. Storage of all consumables including welding electrodes shall be done as per requirement/ instruction of the Engineer by the contractor at his cost.

36.7 In case of improper arrangement for procurement of any consumable, BHEL reserves the right to procure the same from any source and recover the cost from the Contractor's first subsequent bill at market value plus the departmental charges of BHEL from time to time (30% at present). The decision of Engineer in this regard shall be final and binding on the Contractor.

36.8. Special consumables that are supplied by manufacturing units for erection and commissioning purposes will be issued by BHEL as free issue item. However the

contractor shall use them to the satisfaction of BHEL Engineer and keep proper records for accountability

36.9. All lubricants and chemicals required for pre-commissioning, commissioning and testing, and lubricants for trial runs of the equipment shall be supplied by BHEL/ its Client. All services including labour and T&P will be provided by the contractor for handling, filling, emptying, refilling etc. The consumption of lubricants/ chemicals shall be properly accounted for. Surplus material if any shall be properly stacked/ packed and returned to stores.

36.10 It shall be responsibility of the contractor to arrange the complete Radiography equipment & Dark Room and the required consumables and the U/T equipment for NDT at site. For carrying out these tests for distributor and embedded piping, the contractor has to do the work as per drawing requirements with the quoted price.

36.11 Filling of oil for flushing, first filling of oil and subsequent change over or topping/ making up for generator, turbine, transformer etc till the unit is fully commissioned and handed over to customer is included in scope of the contractor. The contractor shall not waste any oil during flushing/ filling. Such wastages shall be on the account og contractor. The contractor shall return all the empty drums to BHEL / BHEL's client store at no extra cost. Any loss/ damage to above drums shall be to contractor's account.

37.0 TOOLS AND PLANTS / IMTE's

37.1 **(NOT APLICABLE)**

37.2 All other T&Ps and IMTEs which are required for successful and timely execution of the work covered within the scope of this tender, shall be arranged and provided by the contractor at his own cost in working condition. In the event of the failure of contractor to bring necessary and sufficient T&Ps/ and IMTEs, BHEL will be at liberty to arrange the same at the risk and cost of contractor and hire charges with overheads as applicable shall be deducted from contractor's bill. Decision of BHEL in this regard shall be final and binding on contractor.

37.3 All distribution boards, connecting cables/ welding cables, wire ropes, hoses etc. including temporary air/ water/ electrical connections etc, shall have to be arranged by the contractor at his own cost.

37.4 **(NOT APLICABLE)**

37.5 **(NOT APLICABLE)**

37.6 **(NOT APLICABLE)**

37.7 **(NOT APLICABLE)**

37.8 **(NOT APLICABLE)**

37.9 **(NOT APLICABLE)**

37.10 Consolidation of ground and arrangement of sleepers / sand bag filling etc. for safe operation/ movement of equipment including cranes / trailers etc. shall be the responsibility of the contractor at his cost.

37.11 **(NOT APLICABLE)**

37.12 **(NOT APLICABLE)**

37.13 **(NOT APLICABLE)**

37.14 **(NOT APLICABLE)**

37.15 **(NOT APLICABLE)**

37.16 **(NOT APLICABLE)**

37.17 The Contractor shall ensure deployment of serviced and healthy T&Ps including cranes, lifting tackles, wire ropes, Manila ropes, winches and slings etc. History card , maintenance and valid fitness certificates of records for major T&Ps will be maintained by the contractor and will be made available to BHEL Engineer for inspection as and when required. Identification for such T&Ps will be done as per BHEL Engineer's advice.

37.18 Contractor shall ensure deployment of reliable and calibrated IMTEs (Inspection, measuring and Test equipment). The IMTEs shall have test/ calibration certificates from authorised/ Govt. approved/ accredited agencies traceable to National/ International standards. Each IMTE shall have a label indicating calibration status i.e. date of calibration, calibration agency and due date for calibration. A list of such instruments deployed by contractor at site with its calibration status is to be submitted to BHEL Engineer for control.

37.19 Re-testing/ re-calibration shall also be arranged at regular intervals during the period of use as advised by BHEL Engineer with in the awarded price. The contractor will also have alternate arrangements for such IMTE so that work does not suffer when the particular instrument is sent for calibration. Also if any IMTEs not found fit for use, BHEL shall have the right to stop the use of such item and instruct the contractor to deploy proper item and recall i.e. repeat the readings taken by that instrument. Failing which BHEL may deploy IMTEs and re-take the readings at contractor's cost.

37.20 BHEL shall have lien on all T&PS, IMTEs & other equipment of the Contractor brought to the Site for the purpose of erection, testing and commissioning. BHEL shall continue to hold the lien on all such items throughout the period of Contract. No material brought to the Site shall be removed from the Site by the Contractor or his Sub-contractors without the prior written approval of the Engineer.

37.21 **The month-wise T&P deployment plan to be submitted as per format (at Annexure - D to General Conditions of Contract)** is only to assess the capability as well as understanding of the contractor to execute the work. It shall be the contractor's responsibility to deploy the required T&P, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account.

38.0 SUPERVISORY STAFF AND WORKMEN

38.1 The contractor shall deploy all the skilled, semi-skilled and un-skilled workmen and experienced supervisors/ engineers required for all the work under this specification. Only fully trained and competent persons with previous adequate experience on the job shall be employed. They shall hold valid certificates wherever necessary. BHEL reserves the right to decide on the suitability of the workers and other personnel who will be deployed by the contractor. BHEL reserves the right to insist on removal of any employee workman

of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.

38.2 The supervisory staff deployed by the contractor, shall ensure proper out-turn of work and discipline on the part of the labour put on the job by the contractor and in general see that the works are carried out in a safe and proper manner and in co-ordination with other labour and staff deployed directly by BHEL or other contractors of BHEL or BHEL's client / other agency.

The bidders may note that they have to deploy following minimum staff having at-least 3 years of working experience at Hydro Electric project powerhouse installation and material handling works within the manpower deployment plan submitted for entire period of the contract as per the plan given by the BHEL site incharge.

i) Engineers (Degree holders)	**1 no. for 20 Man Months (MM)**
ii) Supervisors (Diploma holders)	**1 no. for 20 MM**
iii) Welding/ NDT Level II engineer	**1 no. for 20 MM**
iv) Safety supervisor	**1 no. for 20 MM**

If the contractor fails to deploy this minimum MM than deduction shall be made from his bills at the rate of USD 1200/= per MM from (i) and (iii) and USD 1000/= per MM for (ii) & (iv)

The contractor shall specifically mention the deployment of the above persons in the deployment plan so submitted by him along with the tender.

38.3 The work shall be executed under the usual conditions without affecting major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall co-operate with other personnel/ contractor, co-ordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

38.4 The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship conform to the dimensions and tolerances given in the drawings/ documents/ instructions given by BHEL Engineer from time to time.

38.5 The contractor shall deploy the necessary number of qualified/ certified and approved full time electricians at his cost to maintain his temporary electrical installation till the completion of work.

38.6 It is the responsibility of the contractor to engage his workmen in shifts or on overtime basis for achieving the targets set by BHEL and also during the period of commissioning and testing of unit. The contractor's finally accepted rates/ prices shall include all these contingencies.

38.7 During the course of erection, if the progress is found unsatisfactory or if the target dates fixed from time to time for every mile stones are to be advanced or in the opinion of BHEL if it is found that the skilled workmen like fitters, operators, technicians etc. deployed are not sufficient, BHEL after giving reasonable opportunity to the contractor, will induct on the work the required workmen in addition to contractor's workmen to improve the progress and recover from the contractor's bills any charges incurred for engaging the additional workmen with overheads.

38.8 If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road kerb, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wire, trees or any other property or to any part of erected components etc., the contractor shall make the same good at his own expense or in default, BHEL may cause the same to be made good by other workmen or by other means and deduct the expenses (of which BHEL's decision is final) from any money due to the contractor.

38.9 The Contractor shall submit to BHEL/ WAPCOS, details and Bio-data of all personnel for the proposes to bring into Afghanistan for the performance of Works under the Contract, atleast sixty days prior to their departure for Afghanistan. Such data for each person shall contain the name, his present address, his assignment and responsibility in connection with the Works, and a short resume of his qualifications, experience etc. in relation to the Works to be performed by him.

38.10 Any person unsuitable and unacceptable to BHEL/WAPCOS shall not be brought to Afghanistan. Any person brought to Afghanistan, if found unsuitable or unacceptable later on to WAPCOS, shall within a reasonable time, be repatriated by the Contractor, who shall make alternative arrangements for providing a suitable replacement.

38.11 No person brought to Afghanistan for the purposes of the Works shall be repatriated without the consent of the Engineer-in Charge in writing, which shall be based on written request from the Contractor for such repatriation giving reasons for such an action to the Engineer-in-Charge. The Engineer-in-Charge may given permission for such repatriation provided it is satisfied that the progress of Works shall not suffer due to such repatriation/replacement.

38.12 The cost of passport, visas and all other travel expenses to and from Afghanistan, incurred by the Contractor shall be to his account. The Contractor shall be responsible for the return to the place where they were recruited or to their place of domicile. In the case of death of any of these personnel or member of their family in Afghanistan, the Contractor shall be responsible for making appropriate arrangement for their return or Last rites. BHEL/WAPCOS will not provide any residential accommodation and/or furniture for any of the Contractor's personnel including foreign personnel and the Contractor shall make his own arrangements for such facilities on the Site. **The contractor shall initiate action for obtaining passports, Visas for their staff to be posted immediately after receipt of LOI/intimation from BHEL.**

38.13 The Engineer-in-Charge shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person provided by the Contractor who in the opinion of the Engineer-in-Charge, misconducts himself, or is incompetent or negligent in the proper performance of his duties, or whose presence on the site is otherwise considered by the Engineer-in-Charge to be undesirable and such persons shall not be again allowed upon the Works without the written consent of the Engineer-in-Charge. Any person so removed from the Works shall be replaced as soon as possible by a competent substitute approved by the Engineer-in-Charge.

38.14 **The monthwise manpower deployment plan to be submitted as per format (at Annexure-C to General Conditions of Contract)** is only to assess the capability as well as understanding of the contractor to execute the work It shall be the contractor's responsibility to deploy the required manpower, for timely and successful completion of the job, to any extent over and above those indicated in the above deployment plan (including those which are not covered in the plan submitted) without any compensation on this account. Separate persons shall be identified at site for Quality control and Safety by the contractor as per ISO9000/ OHSAS18001 REQUIREMENT.

39.0 MATERIAL MANAGEMENT AT STORES & POWERHOUSE

39.1 The scope of work mainly involves receipt, unloading from road carriers (Trucks/Trailers etc) in containers despached from seaport and at Herat for 3 units of 14 MW of BHEL (like Hydro-turbines, valves, generators, transformers, bus-duct, piping, auxiliaries equipment, C&I, BOP and other miscellaneous materials/ equipment) at site./ storage yards and shifting from place of unloading (stores developed by contractor), proper storing, stacking/ restacking of materials/ equipment (in closed store sheds/ open storage yards/ project site), verification of components including opening of cases, re-packing/ stacking and preservation of the same after verification including liasioning with carrier for waiver/ reduction of demurrage, watch and ward, to provide fire fighting equipment including fire extinguishers in closed and open storage yard wherever required. Also transportation of material to erection site as and when required. The contractor is to use equipments arranged by him like suitable cranes/ trucks/ tractor-trailers and other material handling equipment including all necessary small/ major T&P required for the same for the above work.

The contractor shall maintain record of material such as receipts, issue, return, in Day – Book, ledgers, stock registers and computers, issue gate passes, record of shortages & MDR etc as per BHEL procedures and instructions. The contractor shall also assist BHEL for all correspondence regarding the insurance including preparation of claims.

39.2 Approx. weight to be handled for 3 units is tentative and indicated in **Annexure- I** is of the order of 1900 MT (Approx.). But the contractor required handling whatever actual materials are dispatched for the project irrespective of variations in weight and sizes. Some equipment as per the direction of engineer may be unloaded in powerhouse with the help of EOT crane from the truck/ trailers depending upon the requirement. The bidders are required to take note of above points while quoting.

39.3 **Annexure-I** gives the general idea for tender's information about the weights and dimensions of some major components/ equipment. The weights and dimensions shown are approximate and are liable to vary. No increase in quoted/ accepted rates/ prices should be allowed due to change in weights and dimensions of the equipment/ materials.

39.4 Not applicable

39.5 The contractor shall deploy adequate number of supervisors, storekeepers, riggers, sarangs carpenter, fitters and other skilled and unskilled workers as per requirement having adequate experience of jobs of similar nature till completion of work.

39.6 Contractor shall provide all necessary preservatives, paints, thinners, rust preventives, grease, lubricants etc. for preservation of components. All tools and tackles and other consumables required for the contractor at his own cost shall also provide preservation of components including supervision. Preservation of components also includes applying preservatives, paints, rust preventives, greasing of threaded portions, repainting of work order Nos./ DU nos./component codes etc. After preservation wherever necessary, components will be stacked properly as per original stacking for which no additional payment shall be made.

39.7 It shall be the responsibility of the contractor to keep in touch with Engineer at site and find out arrival of road consignments. The Contractor shall collect all the lorry waybills from BHEL site office either personally or through an authorised representative. The contractor or his authorised representative shall, for the purpose, visit the said office every day and collect available LWB, PWB etc. While collecting the LWB, PWB contractor or his authorised representative will sign the register maintained for the purpose indicating the date and time of collection. The contractor shall keep in touch with carriers and arrange to effect delivery of consignments immediately on their receipts. Delay may cause

deterioration of goods apart from attracting demurrage charges. Contractor shall also maintain a register indicating date of LWB, PWB date of collection of the materials from road transport agencies/ lorries and date of stacking them at storage yard of BHEL.

39.8 The contractor is required to find out and follow up regularly with carriers regarding arrival of consignments even prior to the receipt of GR, if any, and take delivery of the same on 'INDEMNITY BOND'. Indemnity bonds would be executed by BHEL when the Contractor furnishes intimation regarding arrival of consignment.

39.9 It is possible that in certain cases, LWBs, PWB may not be received in time but BHEL may receive Photostat copies of the same, it is, therefore, the responsibility of contractor to collect such Photostat copies while furnishing indemnity bond from BHEL authorities at site.

39.10 Payment of all demurrages/ wharfages that results due to contractor's faults would be the responsibility of contractor and to his account. If BHEL have to make payment of demurrage/ wharfage together with freight, the amount so paid as demurrage/ wharfage for the reasons stated above shall be paid by the contractor forthwith or would be recovered from bills of the contractor.

39.11 In any case contractor will pursue with concerned Carrier authorities at all level (local/ HQ etc) for waiver/ reduction to the minimum of such demurrage /wharfage charges. Whenever such demurrages/ wharfages become payable due to reasons not attributable to contractor, contractor will immediately bring it to the notice of BHEL with specific request to bear such charges. The decision of the Engineer in such case will be final and binding on the contractor.

39.12 The contractor has to ensure the unloading and removal of materials from unloading place within the permitted time and ensure to keep the area free and avoid jamming. Any loss to BHEL on this account shall be recovered from the contractor.

39.13 Any discrepancy/ shortage/ damage found in the consignment after taking delivery from the carriers after giving clear receipt would be the responsibility of the contractor and the amount liable to be lost by BHEL on such accounts is recoverable from the contractor.

39.14 In case of apparent damages/ shortages in consignments/ packing noticed by the contractor, such cases shall be brought to the notice of BHEL and cleared only with their consent/ approval. The contractor shall provide all the necessary assistance to BHEL for lodging the insurance claim and all correspondence with the insurer, surveyor and transport agency. The contractor shall also help in maintaining all the records in connection of insurance claims.

39.15 It would be responsibility of the contractor to examine the packages, consignments etc. on arrival and bring to the notice of carriers and BHEL authorities regarding loss/ damages, if any, observed in the consignments proposed to be taken delivery of.

39.16 Before taking delivery, particularly of consignments in 'smalls' the weight of the package shall be checked with the invoiced weight of the packages and any discrepancy shall be reported immediately to BHEL/ carriers. In all case of loss/ damages the contractor will take open delivery from the carriers and forward such open delivery certificates (ODC) to the engineer with in 15 days of receipt of such consignment. All expenses connected there with shall be to the account of contractor. BHEL reserves right to claim losses, if any, accrued to BHEL in the event of contractor non-compliance to above.

39.17 In case of short delivery and non-delivery, immediate notice of loss shall be filed with the carrier at places of dispatch and destination as also at any intermediate stations, if it is different one, under intimation to BHEL authorities at site.

39.18 BHEL reserves the right to recover from the contractor any loss which arises out of undue delay/ discrepancy/ shortage/ damages or any other cause during transit between the carriers godown/ weigh bridges and BHEL storage yard/ store sheds/ project site or during unloading at carrier godown/ storage yard/ store shed/ project site or during stacking or any time during the custody of contractor.

39.19 Unloading from lorries, transportation, unloading at storage area/ work site of heavy sophisticated equipment like stator, panels etc. shall be done in the presence of and as per the directions of BHEL representative, including stacking and re-stacking, if necessity arises.

39.20 NOT APPLICABLE

39.21 Since the trucks/ trailers are expected to arrive during any time of the day/ night, the contractor shall have his workmen round the clock at site as well as other places as required to unload the materials.

39.22 Consignments coming on Holidays are also required to be handled by the contractor promptly. It will be the responsibility of the contractor to contact the site engineer /his authorised representative of BHEL at their residence, if required, and obtain instructions to make suitable arrangements.

39.23 In the event unloading from the carrier is delayed by the contractor, the detention charges, if any, will be contractors account.

39.24 Under the scope of this contract, it shall be the responsibility of the contractor to provide all necessary facilities to open the packages in the presence of the engineer, verifying the contents of the packages, repackaging where ever and whenever necessary, properly stacking them as may be directed by the engineer so as to facilitate proper handling, periodical verification of material, receipt position, stock taking etc. for this, the contractor shall have experienced person at site who can maintain the records of dispatch/ receipt/ stacking/ verification/ shortages/ damage/ missing items etc. The verification of materials shall be carried out with in 15 days and report shall be submitted as a documentary proof.

39.25 All material shall be stored 6 inches above ground level by use of concrete or wooden sleepers. No material shall be left to remain on ground at any time. Material shall not be stacked in low-lying areas where it is likely flooded during rains. Wooden sleepers/ concrete block and tarpaulins for this purpose, wherever deemed necessary be arranged by the contractor. These items shall be stacked/ stored properly at the location(s) specified by BHEL when not in use.

It is possible that certain heavy items/ consignments will require fabrication of temporary steel coverings over it. These shelters will be covered with suitable CGI sheets or tarpaulin. The contractor will be required to fabricate such sheds.

39.26 The material/ equipment requiring indoor storage will be handed and stacked inside the storage shed (provided by contractor) by the contractor using suitable material handling equipments like cranes, etc.

39.27 For checking/ verification of the components with packing slips/ LWB/ PWB etc. The contractor shall provide sufficient experience persons and other facilities as and when required by the engineer.

39.28 Stacking of the material shall be done as per the instruction and to the satisfaction of engineer. The materials shall be so stacked that the same should facilitate easy handling. In the event of any improper stacking BHEL may ask the contractor to restock the material properly or failing which BHEL may get the job done by another agency at the risk and cost of the contractor.

39.29 The contractor shall execute the work in the most substantial and workman like manner. The stores shall be handled with care and diligence. Any loss to BHEL due to contractor's lapse /negligence shall have to be made good by the contractor.

39.30 In case contractor is not able to unload, transport, stack the material at a pre-determined area, as per direction of the engineer for any reason whatsoever (including non-availability of crane, tractor, trailer and other T&P etc.) BHEL shall be at liberty to get the work done by engaging other agency/ equipment / T&P etc at the risk and cost of the contractor.

39.31 It shall be responsibility of the contractor to keep the storage areas (closed/ open) in neat and tidy conditions. Any vegetation like grass, bushes, sarkandas etc. shall be cut in open storage area and removed as per requirement and instruction of BHEL engineer within the contractual value. All surplus/ unusable packing materials shall be removed and deposited at location(s) specified by BHEL within the project premises (including weighment of the same within the project premises if required).

39.32 **(NOT APLICABLE)**

39.33 In case some materials are required to be dispatched from Site to Manufacturing Units, other sites or any other place, the contractor may be asked by the engineer to get the same packed, suitable for transport.

39.34 In case of consignment to be dispatched on full truck/ trailer load basis, where the carriers will place their fleet inside the plant for loading the contractor may be asked to collect them from different locations of stores shed / yard and load by using his crane and labour. Tenderers are required to quote rates for the work in rate schedule.

40.0 MATERIAL HANDLING AND STORAGE & TRANSPORTATION TO POWERHOUSE

40.1 Contractor shall plan in consultation with BHEL engineer, plant/ material to be received/ delivered in powerhouse as per erection progress/ schedules and fill in the requisite formats in standard forms.

40.2 Contractor shall store / stack/ identify materials properly in open/ closed/ tarpaulin covered storage yard/ shed and it shall be contractors responsibility to assist BHEL in identifying material well in time for erection according to programme.

40.3 The contractor shall identify and deploy necessary engineer/ supervisor/ workmen for the above work in sufficient number.

40.4 All the equipment shall be handled very carefully to prevent any damage or loss. No untested wire ropes/ slings etc. shall be used for unloading/ handling. The equipment shall be properly protected to prevent any damage either to the equipment or to the floor where

they are stored. The equipment from the stores shall be moved the actual location at the appropriate time so as to avoid damage of such equipment at site.

40.5 Contractor shall ensure that while lifting slings shall be put over the points indicated on the equipment or as indicated manufacturer drawings. Slings/ shackles of proper size shall be used for all lifting and rigging purposes. All care shall be taken to safe guard the equipment against any damages. In no case piping should be dragged. In case of any damage the cost shall be recovered from the contractor.

40.6 Contractors shall be responsible for examining all the plant material received by them and notify the engineer immediately any damage, shortages, discrepancies etc. The contractor shall submit to the engineer every week a report detailing all the receipt during the week, however the contractor shall be solely responsible for any shortages or any damages in stores, storage yard, handling, storage at erection site and erection of equipment once received by them.

40.7 **As the storage & erection work can be spread in different areas/ locations of the project, contractor has to arrange sufficient numbers of watch & ward personals to avoid any pilferage of material.** In case any equipment/ material is lost/ damaged while in the custody of the contractor, the cost of repair/ replacement if any to bring back the equipment in original order shall be deducted from the contractor's bill. BHEL's decision in this regard shall be final and binding on the contractor.

40.8 The contractor shall maintain an accurate and exhaustive record detailing out the list of all equipment received by him for the purpose of erection and keep such record open for the inspection of the engineer at any time.

40.9 All the material in custody of contractor and stored in the open or dusty locations must be covered with suitable weather proof/ fire retardant covering material wherever applicable and shall be blocked up on raised level about ground. The contractor at his cost shall arrange all covering materials and blocks and sleepers.

40.10 If the material belonging to the contractor are stored in area other than those earmarked for this operation the engineer will have the right to get it moved to the area earmarked for the contractor at the contractors risk and cost.

40.11 All electrical panels, control gear, motors and such other devices shall be dried by heating before they are installed and energized. Exposed parts those required special protection such as bearings, slip rings, commutators and other fragile items shall be protected against moisture ingress and corrosion during storage and are periodically inspected.

40.12 The contractor shall ensure that all the packing materials and protective devices used for various equipment during transit and storage are removed before the equipment is installed.

40.13 The contractor shall be responsible for making suitable indoor storage facilities to store all equipment (drawn by the contractor from BHEL/ Customer stores), which require indoor storage till the time of their installation. The Engineer will direct the contractor in this regard which item in his opinion will require indoor storage and the contractor shall comply with Engineer's decision.

40.14 The contractor shall ensure that all surplus damaged scrap/ unused, packing wood/ containers / special-transporting frames etc. are returned to BHEL at a place in project area identified by the Engineer. All account will be maintained by the contractor for all such items received and returned to BHEL. Any shortage in returning such items shall be

chargeable to the contractor excepting an amount of 20% allowable against wastage for packing wood only.

40.15 The contractor shall hand over all parts/ materials remaining extra over the normal requirement with proper identification tags to the concerned BHEL Engineer.

40.16 Contractor shall also ensure that lifting heavy equipment such as generator rotor, stator, Main inlet valve, shafts etc. shall be done strictly in accordance with drawing given for the purpose and using of lifting tackles supplied for the purpose. Wherever required rubber/ leather pads shall be given between the slings and the machined parts to avoid any damages, scratches to the machined surface. Contractor shall cover bearing journals with grease and cloth as per direction of engineer to avoid damages to the surface.

40.17 As per the erection requirement contractor shall deliver material to powerhouse/ work site. The maximum care has to be taken during that time of loading the material at storage area, transportation and unloading at powerhouse. No untoward damage should occur to the material at that time. Any loss of item/ damages shall be to the contractors account.

41.0 PRESERVATION OF COMPONENTS

41.1 After taking delivery from BHEL/ customer/ transporter of manufacturing units/ customer's stores, plant materials storage shall be subjected to the following protection besides other provisions indicated in these specifications elsewhere.

a) Items stored outdoors shall be blocked up above the ground suitably

b) Generator, poles, insulating materials, valves, electrical equipment, control equipment and instruments, rubber items etc. shall be stored indoors in warehouse provided by BHEL/ its Client. Windings shall be kept dry by use of external heat or space heaters.

c) Bearings and other wearing surfaces of plant materials shall be protected against corrosion and kept clean.

d) Insulation materials shall be stored indoors/ protected against getting wet.

41.2 It shall be the responsibility of the contractor to apply preservatives/ touch up paints (primer) on equipment handled and erected by him till such time of final painting. It shall be contractor's responsibility to arrange for required paints (Primer), thinners, labour, scaffolding materials, cleaning materials like wire brush, emery sheets, etc., cleaning of surface and provide one coat of preservatives/ paints (primer) from time to time as decided by BHEL engineer. The accepted rate shall include this work also. It is to be noted that such painting may have to be done as and when required till such time the final painting is carried out.

41.3 The contractor shall effectively protect the finished work from action of weather and from damage or defacement and shall cover the finished parts then and there for their protection.

41.4 Any failure on the part of contractor to carry out works according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from contractor.

42.0 CLEANING OF EQUIPMENT

42.1 The contractor shall thoroughly clean all the components before installation of the components whose surfaces are coated with protective coating and sent to site are to

be thoroughly cleaned by suitable mechanical/ chemical means as per the approved procedure.

42.2 Contractor shall ensure that the items identified by BHEL shall be cleaned with kerosene/ petrol/ CRC before assembly and erection of the equipment. For cleaning purposes he shall use only soft cotton cloth. Contractor shall never use cotton waste for cleaning any equipment. The electrical equipment before erection shall be cleaned with dry air/ vacuum cleaner.

42.3 The contractor shall clean inside of all pipes and fittings from dirt, sand and loose scales, mechanically/ chemically and by air blowing before being erected. All pipe lines be thoroughly blown/ flushed. If necessary certain pipelines may have to be cleaned by acid pickling/ chemical cleaning. The procedure for the same shall be provided by BHEL. All chemicals and inhibitors shall be arranged by the contractor with in the contract. Disposal of chemical has to be carried out by the contractor at his own cost.

43.0 ERECTION

43.1 All works such as cleaning, checking, levelling, blue matching, aligning, assembling, temporary erection for alignment dismantling of certain equipment for checking, cleaning, surface preparation, fabrication at site, cutting, grinding, straightening, chamfering, filing, chipping, drilling, reaming, dowelling, scrapping, machining, surface grinding, shaping, fitting up welding, tube expansion etc. as may be applicable in such erection works are to be treated as incidental to erection and necessary to complete the work satisfactorily & shall be carried out by the contractor as part of the work.

43.2 Any fixtures, scaffolding materials, approach ladder, concrete block supports, steel structures required for temporary supporting, pre-assembly or checking, welding, lifting and handling during pre-assembly and erection shall be arranged by contractor at his cost within the finally accepted rates.

43.3 No members of the ladder/ structure/ platform should be cut without specific approval of BHEL. In case it is necessary to cut, the contractor shall rectify/ repair in a manner acceptable to BHEL/ customer without any additional cost.

43.4 The contractor shall erect scaffolding/ temporary platforms for erection. These should be of adequate capacity and shall never be over loaded. These should be replaced when not found suitable during erection work and dismantled on work completion & removed from work site.

43.5 Corrections like straightening of ladders, tube support plates adjustment/ removal of ovulates in pipes and opening or closing the fabricated bends of piping to suit the layout shall be considered part of the work and the contractor is required to carry out such work within finally accepted price/ rate as per instructions of Engineer.

43.6 The contractor shall fabricate pipes, special bends, etc. threading and welding as required and carry out the chemical cleaning of fabricated piping.

43.7 The servicing and realignment of skid-mounted equipment if required or if directed by BHEL shall be carried out by the contractor at no extra cost to BHEL.

43.8 The contractor shall completely erect & test all the piping systems, covered in the specification including sampling lines up to and including sample coolers, hangers & supports, valves & accessories in accordance with the drawings furnished. This includes all necessary bolting, welding, pre-heating, stress relieving, testing, cleaning &

painting. System shall be demonstrated in condition to operate continuously in a manner acceptable to the Engineer. Welding shall be used throughout for joining pipes except where flanged screwed or other type joints are specified or shown on the drawings. All piping shall be erected true to the lines & elevation as indicated in the drawings.

43.9 Pipes sent in standard length shall be cut to suit the site conditions and the layouts. Tubes or pipes wherever deemed to be convenient will be sent in running lengths with sufficient bends. Bends upto 80 mm Nb may have to be fabricated at site.

43.10 The contractor shall ensure lowering of pipes in position with adequate precautions as to avoid any damage to either material or men. Only the anchoring points earmarked for the purpose of lowering the pipes are to be used.

43.11 Certain adjustments in length may be necessary while erecting pipelines. The contractor should remove the extra lengths/ add extra lengths to suit the final layout after preparing edges a fresh by adopting specified heat treatment procedures, at no extra cost.

43.12 It is possible that a few flanges may not be matching. The contractor shall be required to cut and re-weld the same as and when required without any additional cost.

43.13 The contractor shall be responsible for any modifications of shop fabricated pipes prior to installation to accommodate minor site alteration in pipe routing at no extra cost.

43.14 All vents and drains for piping equipment covered in the scope whether shown in the drawings or not shall terminate in atmosphere and to pit as directed by BHEL.

43.15 Wherever piping erected by the contractor is connected to equipment/ piping erected by the other agencies the joint at the connecting point shall be the responsibility of the contractor of this specification.

43.16 Normally the valves will have prepared edges for welding. But, if it becomes necessary, the contractor will prepare new edges or recondition the edges by grinding or chamfering to match the corresponding tubes and pipes. All fittings like `T' pieces, weld neck flanges, reducers etc., shall be suitably matched with pipes for welding. The valves will have to be checked, cleaned or overhauled in full or in part before erection after chemical cleaning and during commissioning.

43.17 The contractor shall be responsible for correct orientation of all valves so that seats, stems & hand wheels will be in desired location. It is the responsibility of the contractor to obtain the information regarding orientation of valves not fully located on drawings before the same are installed.

43.18 Suspension for piping, etc., will be supplied in running lengths, which shall be cut to suitable sizes and adjusted as required.

43.19 The adjustment of all supports erected for maintaining the proper slopes of piping wherever required is also included in the scope of the contractor.

43.20 No temporary supports should be welded on the piping. In case of absolute necessity prior approval should be taken from BHEL Engineer. In such cases heat treatment if required, shall be carried out by the contractor as part of subject work.

43.21 All supports and anchors shall be installed as per drawing to obtain safe and reliable and complete pipe installation as per instructions of Engineer. Any additional support as called

for by Engineer shall have to be fabricated and provided by the contractor. The raw materials required for fabricating such supports shall be arranged by BHEL.

43.22 Contractor shall install piping in such a way that no excessive or destructive expansion forces exist under any condition.

43.23 The contractor shall carry out the tightening of the field bolts on the equipment and piping covered under this specification by using either the calibrated torque wrench method or the turn of part method. The methods used, the tools and the equipment deployed shall be subject to the approval of Engineer. All the torque wrenches shall be calibrated at the start of each days work and at least once during the day. The bolting work shall be carried out by the competent technicians.

43.24 The contractor shall ensure that all supporting elements, anchors & restraint have been installed and adjusted in accordance with the drawings / sketches & other written instructions of the Engineer.

43.25 Layout of small bore piping as required shall be done as per site requirement. Necessary sketch for routing these lines should be got approved from BHEL by the contractor. There is a possibility of slight change in routing the above pipe lines even after completion of erection or from aesthetic point of view which should be carried out at no extra cost.

43.26 All the valves, including motorised valves, flap valves, etc. shall be serviced and lubricated to the satisfaction of Engineer before erecting the same and during pre-commissioning also. Welding or jointing of extension spindle for valves to suit the site conditions and operational facility shall be part of erection work within the quoted rates.

43.27 Additional platforms and ladders of permanent nature incidental to the job for approaching different equipment/ valves as per site requirement, which may not be indicated in drawings, shall be fabricated and installed by the contractor. The materials required will be supplied by BHEL free of cost.

43.28 Erection and welding of necessary instrumentation tapping points, valves to be provided on equipment, auxiliaries and pipe lines covered within the scope of this specification, will also be the responsibility of the contractor and will be done as per the instructions of BHEL Engineer at no extra cost.

43.29 All the items will be supplied in pieces/ loose and are to be assembled bolted and welded at site. Contractor has to work as per the drawings and instruction issued at site for erection and testing purposes. Weights for handling and erection in the annexures are indicative only. **No claim will be entertained on account of variations in weights or change from conventional design e.g from bolted to welded connections and vice versa, increase in number of pieces etc. The bidders should take care of this point while quoting lumpsum price for subject works for handling and erection works.**

44.0 WELDING, HEAT TREATMENT, RADIOGRAPHY AND OTHER NON-DESTRUCTIVE TESTING (ONLY ULTRA SONIC TESTING IS ENVISAGED. RADIOGRAPHY WILL NOT BE DONE. AS SUCH, CLAUSES PERTAINING TO RADIOGRAPHY SHALL NOT BE APPLICABLE)

44.1 The equipment and piping shall be erected in conformity with the provisions of standard/ specification and as may be directed by BHEL The method of welding (arc, gas, TIG, MIG or other method) may be indicated in the detailed drawings/ schedules. BHEL Engineer will have the option of changing the method of welding as per site requirements.

44.2 Welding being a special process, all-welding shall be carried out by skilled and experienced welders holding valid certificates as per requirements of ISO 9002. The certificate shall be checked by BHEL before allowing the welders to be engaged on welding. BHEL at its own discretion may ask any or all welders to under go welder Qualification Test as per Standard Procedure in accordance with requirements of ISO 9002 and as per welding manual of BHEL**. The deployment of qualified welder and subsequent site testing of requisite numbers of welders shall be one of the prerequisite of contractors site mobilisation completion.**

44.3 All welders including tack welder, structural and pipe welder shall be tested as per ASME section IX and approved by BHEL Engineer before they are actually engaged on work though they may possess the certificate. BHEL reserves the right to reject any welder if the welder's performance is not found to be satisfactory. The contractor in Performa given by BHEL Engineer shall maintain the records of qualification of welders. All the welders qualified for the work will be issued an identity card by BHEL Engineer and welder will keep the same with him at work place.

44.4 BHEL Engineer may stop any welder from the work if his performance is unsatisfactory for any technical reason or if there is a high percentage of rejection of joints welded by a particular welder which, in the opinion of the Engineer will adversely affect the quality of the welding though the welder has earlier passed the tests prescribed by Engineer. The welder's having passed qualification tests does not absolve contractor of contractual obligation to continuously check the welder's performance.

44.5 Faulty welds caused by the poor workmanship shall be cut and re-welded at the **contractor's expenses including cost of materials**. The Engineer prior to any repair being made shall approve the procedure for the repair of defective welds. Radiography or any other NDT on completed field welds shall be conducted as per drawings or instructions of BHEL engineer.

44.6 The contractor shall carry out the root run welding of all piping, valves, instrumentation, tapping points etc. by TIG/ SMAW / MIG welding process. The contractor shall have to carry out full TIG welding of butt weld joints of tubes /pipes of lesser thickness if required. During the root runs of stainless steel joints, the contractor shall before and during welding have to purge the pipes with inert gas in case of stainless steel. All arrangements required for the above shall be the responsibility of the contractor at no additional cost.

44.7 All charges for testing of contractor's welders including consumables for welding / destructive and non destructive tests conducted by BHEL at site or at laboratory shall have to be borne by the contractor only. The test coupons raw material will be supplied by BHEL free of cost.

44.8 The regulators used on welding machines shall be calibrated before putting these into use for work. Periodic calibration for the same shall also be arranged by the Contractor at his cost.

44.9 Only **BHEL approved electrodes and filler wire** will be used. All electrodes shall be baked and dried in the electric electrode-drying oven to the required temperature for the period specified by the Engineer before these are used in erection work. All welders shall have electrodes drying portable oven at the work spot. The electrodes brought to the site will have valid manufacturing test certificate. The test certificate will have co-relation with the lot No. /batch No given on electrode packets. No electrodes will be allowed to be used in the absence of above requirement. The thermostat and thermometer of electrode drying oven will be also calibrated and test certificate from Govt. approved / accredited test house traceable to National / International standards will be submitted to BHEL before

putting the oven in use. Periodical calibration for the same shall also be arranged by the contractor within the finally accepted rates.

44.10 All butt / fillet welds shall be subject to dye penetration test as per drawing and document requirement and have to be carried out as per the instructions of the engineer within the quoted / finally accepted rates for this contract .

44.11 The contractor shall maintain a record in the form as prescribed by BHEL of all operations carried out on each weld and maintain a record indicating the number of welds, the names of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejection if any, percentage of rejection etc. and submit copies of the same to the BHEL Engineer as required. Interpretation of the BHEL Engineer regarding acceptability or other wise of the welds shall be final. All site welding joints shall be subject to acceptance by BHEL Engineer

44.12 All welds shall be painted with anticorrosive red oxide paint once radiography and stress reliving works are over. Necessary consumables and scaffolding etc. including paints shall be provided by contractor at his own cost.

44.13 The contractor shall carry out the edge preparation of weld joints at site in accordance with the details acceptable to BHEL. Wherever possible machining or automatic flame cutting will be allowed only wherever edge preparation otherwise is impractical. All slag's / burrs shall be removed from cuts and all the hand cuts shall be ground smooth to the satisfaction of engineer.

44.14 Pre-heating, radiography and other NDT tests, post heating and stress relieving after welding of tubes, pipes, including attachment welding wherever necessary, are part of erection work and shall be carried out by the contractor in accordance with the instructions of Engineer. All equipment and consumables essential for carrying out the above process shall be arranged by contractor at his cost.

44.15 Contractor shall arrange all necessary stress relieving equipment with automatic recording devices. Also the contractor shall have to arrange for labour, heating elements, thermocouples, etc. insulating materials like asbestos cloth, ceramic beads, asbestos ropes etc. required for heat treatment/ stress relieving operations. Temperature shall be measured by thermocouple and recorded on a continuous printing type recorder. All the recorded graphs for heat treatment works shall be the property of BHEL. The contractor has to provide thermal chalks, temperature recorders, thermocouple attachment units, graphs sheets, etc. for checking within the finally accepted rates. All stress relieving equipment will be used after due calibration and submission of test certificate to BHEL. Periodic calibration from Govt. approved / accredited Test Houses traceable to National / International standards will also be arranged by the contractor for such equipment at his cost. The contractor shall obtain the signature of BHEL Engineer or his representative on the chart of the recorder after setting up the weld joints for heat treatment operation prior to the starting..

44.16 The contractor shall also be equipped for carrying out other NDT like DP/ MPI / UT etc. as required as per welding schedule/ drawings within the finally accepted price/ rates.. Necessary help including surface preparation and scaffolding required for conducting all the shall be rendered by contractor at his own cost.

44.17 The technical particulars, specification and other general details for NDT work shall be in accordance with ASME, ISO or as specified by Drawings and Manuals of BHEL / WAPCOS

44.18 Low speed high contrast, fine grain films (D-7 or equivalent) in 10cm. width only be used for weld joint radiography. Film density shall be between 2.0 to 4.0.

44.19 Iridium – 192 or any other source specified by BHEL Engineer shall be used by contractor for radiography work. The geometric un-sharpness shall not exceed 0.05 mm. Taking adequate safety precautions shall be the responsibility of the contractor while carrying out radiography. Necessary safe guards required for radiography (including personnel) from BARC shall be arranged by contractor at his own cost.

44.20 All radiographs shall be free from mechanical, chemical or process marks, to the extent they should not confuse the radiographic image and defect finding. Penetrameter as per ASME or ISO must be used for each exposure.

44.21 Lead numbers and letters are to be used (generally 6mm size) for identification of radiographs. Contract no., joint identification, source used, welder's identification and SFD are to be noted down on paper cover of radiograph.

44.22 Lead intensifying screens for front and back of the film should be used as per the above referred ASME specification.

44.23 The joint is to be marked with permanent mark A, B, C, etc. to identify the segments. For this a low stress stamp shall be used to stamp the pipe on the down stream side of the weld.

44.24 For multiple exposure, an overlap of about 25 mm of film should be provided.

44.25 Radiography personnel with sufficient experience and certified by M/s BARC as Radiographer for conducting radiographic tests in accordance with safety rules laid down by Division of Radiological protection only have to be deployed . These personnel should also be registered with BARC for film badge service.

44.26 All arrangements for carrying out radiography work including dark room with air conditioner/ blower and other accessories shall be provided by contractor within the space allotted for office at his cost. As an alternative the contractor may deploy an agency having all above facilities and who are duly approved / accredited by BARC and/or other Regulatory authorities. Detailed particulars of such agencies will be submitted and got approved by BHEL Engineer before the actual deployment of agency for radiography work.

44.27 The contractor shall have a dark room fully equipped with radiography equipment, film (unexposed), chemicals and any other dark room accessories such as Airconditioner/ Blower etc. There should be adequate number of radiography personnel with sufficient experience and certified by M/s BARC as Radiographer for conducting radiographic tests in accordance with safety rules laid down by Division of Radiological protection. These personnel should also be registered with BARC for film badge service.

44.28 Contractor shall note that 100% radiography will be done at the initial stages on all the welding joints as specified in the drawings. Subsequently radiographic inspection will be done on the basis of quality of welding. However minimum percentage of joints to be radiographed shall not be less than the requirement of BHEL welding schedule. The percentage may be increased depending upon the quality of joints and at the discretion of BHEL. Radiography on LP piping joints is not envisaged. However other NDT test as called for in the FQP including LPI, MPI and HT will have to be carried out.

44.29 All the Radiographs shall be properly preserved and shall become the property of BHEL.

44.30 Since radioisotopes are being used, all precautions and safety rules/regulations as prescribed by BHEL/BARC/ Customer or any other statutory body in Afganistan shall be strictly followed. BARC certificate/permission letter to be provided before taking up the work.

44.31 Radiography of joints shall be so planned after welding that the same is done either on the same day or next day of the welding to assess the performance of HP welders. If the performance of welder is unsatisfactory, he shall be replaced immediately.

44.32 Wherever radiographs are not accepted, on account of bad shot, joints shall be re-radio graphed and re-shots submitted for evaluation. Radiographs shall be taken on joints after carrying out repairs. However, if the defect persists after first repair, as per radiograph, carrying out radiography shall be repeated till the joint is made acceptable. In case the joint is not repairable, the same shall be cut, re-welded and re-radio graphed at contractor's cost.

44.33 If the contractor does not carry out radiography work due to non-availability of source / film / chemical / operator etc., BHEL will get the work done departmentally or through some other agency at the risk and cost of the contractor.

44.34 Heat treatment and radiography may be required to be carried out at any time (day and night) to ensure the continuity of the progress. The contractor shall make all necessary arrangements including labour, supervisors/ Engineer required for the work as per directions of BHEL.

44.35 The contractor shall assist BHEL Engineer in preparing complete field welding schedule/procedure for all the field welding activities to be carried out in respect of piping and equipment erected by him involving high pressure welding at least 30 days prior to the scheduled start of erection work at site. Such schedules shall be strictly adhered to by the contractor.

44.36 The radiography may be required to be carried out at any time (day and night) to ensure the continuity of the progress. The contractor shall make all necessary arrangements including labour, supervisors/ Engineer required for the work as per directions of BHEL.

45.0 TESTING, PRE-COMMISSIONING, COMMISSIONING AND POST-COMMISSIONING.

45.1 On completion of erection of equipment, the contractor shall get the equipment checked up by the Owner (M/s WAPCOS), BHEL and their deputed supervisors, specialists concerned with the particular item of work. The testing of various equipment will be carried under the supervision of BHEL/ WAPCOS with the assistance of the Contractor in the manner decided by and in the presence of the owner and other authorised supervisors concerned, and to their entire satisfaction. On completion of these preliminary checks by the equipment supplier, the contractor shall make the equipment ready for conducting the test. The contractor shall rectify all defects found during the checking / testing as directed by the BHEL/ /Owner to ensure satisfactory operation of the equipment.

45.2 The contractor shall carry out the required tests as instructed by BHEL using contractor’s own consumables, labour and scaffoldings.

45.3 All the tests shall be repeated till all the equipment satisfy the requirement / obligation of BHEL at various stages. Contractor shall also carry out repair of all the welded joints (site and suppliers) failed during testing.

45.4 The scope of testing activities cover installation of all necessary temporary piping, supports, valves, blanking, pumps, tanks etc. and other accessories with access platforms valves, pressure gauges, electric cables, switches, cutting of some of existing valve, placing of rubber wedges in the valves etc., required for hydro test, chemical cleaning, or for any other tests as the case may be and will carry out above activities under this scope of work as per instructions of BHEL. The scope also covers the off site disposal of effluents.

45.5 For testing of distributor the necessary test pump and bulk heads shall be supplied by BHEL. Any other item which may be required additionally shall be arranged by contractor. The necessary bulk heads etc for testing of piping system including hardware shall be arranged by the contractor within his scope of work.

45.6 It shall be the responsibility of the contractor to provide various category of workers in sufficient numbers along with Supervisors including necessary consumables, T&Ps, IMTEs etc., and any other assistance required during testing of equipment and attending any problem in the equipment erected by the contractor till handing over. Association of BHEL's/ Client's staff during above period will not absolve contractor from above responsibilities.

45.7 It shall be specifically noted that the above employees of the contractor may have to work round the clock along with BHEL Engineers and hence overtime payment by the contractor to his employees may be involved. The contractor's finally accepted rates/ price shall be inclusive of all these factors also.

45.8 In case, any rework is required because of contractor's faulty erection which is noticed during testing, the same has to be rectified by the contractor at his cost. If any equipment/ part is required to be inspected during testing, the contractor will dismantle /open up the equipment / part and reassemble / redo the work without any extra claim.

45.9 During testing, opening/ closing of valves, changing of gaskets, realignment of rotating and other equipment, attending to leakage and adjustments of erected equipment may arise. The finally accepted price shall also include all such work.

45.10 The contractor shall make all necessary arrangements including making of temporary closures on piping/ equipment for carrying out the hydro test on al piping equipment covered in the specification at no additional cost.

45.11 In case any defect is noticed during tests such as loose components, undue noise or vibration, strain on connected equipment etc., the contractor shall immediately attend to these defects and take necessary corrective measures. If any readjustment and realignment are necessary, the same shall be done as per Engineer's instructions including repair, rectification and replacement work by the contractor at his cost. The parts to be replaced shall be provided by BHEL.

45.12 The contractor shall carry out cleaning and servicing of valves prior to testing of the equipment under his scope. A system for recording of such servicing operations shall be developed and maintained in a manner acceptable to BHEL Engineer to ensure that no valves are left un-serviced. Wherever necessary as required by BHEL Engineer, the contractor shall arrange to lap / grind valve seats.

45.13 Cleaning & servicing of all the filters/ strainers, toppings of oils coming in the system shall be done by the contractor within the accepted price.

45.14 At the time of each inspection, the contractor shall take note of the decisions / changes proposed by the Engineer and incorporate the same at no extra cost.

46.0 PROGRESS REPORTING

46.1 Contractor is required to draw mutually agreed monthly erection programmes in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed programme and shall also timely arrange additional resources considered necessary at no extra cost to BHEL

46.2 Weekly progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled programme shall be discussed for actions to be taken for achieving targets. The programme for subsequent week shall also be presented by contractor for discussions. The contractor shall constantly update/ revise his work programme to meet the overall requirement. All quality problems shall also be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner so as to eliminate the cause of non-conformities.

46.3 The contractor shall submit daily, weekly and monthly progress reports, manpower reports, materials reports, consumables (gases/ electrodes) report and other reports as per Performa considered necessary by the Engineer.

46.4 The progress report shall indicate the progress achieved against planned, with reasons indicating delays, if any, and shall give the remedial actions which the contractor intends to take to make good the slippage or lost time, so that further works again proceed as per the original programme and the slippage's do not accumulate and effect the overall programme.

46.5 The daily manpower reports shall clearly indicate the manpower deployed with specialisation, category wise specifying also the activities in which they are engaged.

47.0 DRAWINGS AND DOCUMENTS

47.1 The detailed drawings, specifications available with BHEL engineers will form part of this tender specification. These document will be made available to the contractor during execution of work at site. The contractor will also ensure availability of all drawings / documents at work place.

47.2 Necessary drawings to carry out the erection work will be furnished to the contractor by BHEL on loan which shall be returned to BHEL Engineer at site after completion of work. Contractor shall ensure safe storage and quick retrieval of these documents.

47.3 The contractor shall maintain a record of all drawings and documents available with him in a register as per format given by BHEL Engineer. Contractor shall ensure use of pertinent drawings/ data/ documents and removal of obsolete ones from work place and returning to BHEL.

47.4 The data furnished in various annexes enclosed with this tender specification are only approximate and for guidance. However, the change in the design and in the quantity may occur as is usual in any such large scale of work.

47.5 Should any error or ambiguity be discovered in the specification or information the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.

47.6 Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimension / details, without specific approval of BHEL.

48.0 TAXES

48.1 **TDS under income Tax, sales tax, VAT and surcharge or any other taxes etc, if any, as per Indian/ Afganistan Law, as applicable, shall be deducted** at the prevailing rate on gross invoice value from the running bills unless exemption certificate from appropriate Authority / Authorities is furnished.

48.2 **Bidders shall quote their Prices inclusive of all taxes and duties. No taxes/duties or any other levy shall be paid/ reimbursed separately.**

48.3 Contractor shall get his organisation registered with concerned statutory /local sales tax authorities as required(As per the requirement in Afganistan), within 30 days of award of the contract as per requirements. The delay on this account and delay in bringing the material shall be to contractor's account and no extension of time shall be allowed on this account. The sales tax registration for this contract shall be forwarded to BHEL within 45 days from the date of LOI. In case the contractor is already registered for sales tax with Govt. Authorities, he must quote his registration no. while submitting the tender. The mobilisation shall also treated as complete only after the contractor himself registered with the sales tax/ works tax/ service tax authorities.

48.4 Contractor has to make his own arrangement at his cost for completing the formalities (Including Work Permits/Road Permits), if required, with the concerned Authorities in Afganistan, for bringing his materials, tools & plants, equipment at site for the execution of the work under this contract.

49.0 EXTRA WORK:

49.1 BHEL may consider for payment of extra works on manhour basis @ Three USD per manhour only for such of those works which:

a) Require major revamping or rework and which are totally unusual to normal erection work.

b) Require rectification / modification for improvement in the design during testing/ commissioning,

c) Requiring fresh fabrication of components in place of rejected/ replaced components.

49.2 The rates indicated as above, shall include over time, if any, consumables, supervision, use of tools and tackles and other site expenses and incidentals.

49.3 The extra works, if any, shall be carried out by a separate gang or beyond working hours which can be identified for certification of man-hours. Logbook should be maintained and should be signed jointly by the contractor's representative and the BHEL Engineer on day to day basis. However, signing of log book does not necessarily mean acceptance of the extra works which would be identified by Engineer whether work is covered in one of the above categories. Only those works and man-hours, which are certified by the BHEL Engineer-in-charge, will be considered for payment. The decision of BHEL in this regard shall be final and binding on the contractor.

50.0 PRICE VARIATION

50.1 The finally accepted rates for scope of work as defined in this tender are not subject any price variation and the same shall remain firm through out the contract period including extended period, if any.

51.0 RATE SCHEDULE

51.1 Contractor shall fully understand equipment description and scope of work before quoting. The scope of work and responsibility of the contractor as mentioned under these specifications shall be covered within the quoted rates.

51.2 The tenderer shall quote the rates as per the rate schedule only, in Part- II price bid (Original). Conditional price bids or price bids with any deviation/ clarification etc. are liable to be rejected. No cutting/ erasing / over writing shall be done.

51.3 The contractor undertakes to handle actual quantities as per advice of BHEL Engineer. Quantities mentioned in the Weight Schedule are approximating only and liable for variation due to change of scope of work / variation in schedule of quantities, changes in design etc. The quantities indicated against each item may vary to any extent and no compensation will be payable in variation of Individual quantity.

Contractors are required to take above into account while quoting. The contractor confirms that unit rates quoted above takes care of such variation during execution stage.

52.0 INSTRUCTIONS TO TENDERERS

52.1 Offers received without data/ information required to be submitted under tender clauses-11.1 to 11.11 are liable to be rejected. Documentary evidences should duly support all these data/ information.

52.2 No deviations to the tender conditions will normally be accepted.

52.3 The tenderers are advised to actually visit the site and fully acquaint themselves with the actual local conditions prevailing in Afganistan, site conditions, location of stores, transportation routes, communication facilities, Local taxes, toll charges and levies, labour condition, local labour minimum wages & prevailing wage agreements at site, quantum of work etc. before quoting their rates for this work. **The bidders shall familiarize themselves especially with the rules and regulations applicable to the foreign firms for carrying out business in Afganistan.** In their own interest, the Bidders are required to familiarize themselves with the Income tax Act, Companies Act. Custom Act, Prevailing labour laws & other related Acts and Laws prevalent in India & Afghanistan. Further, the Bidders are required to comply with the Insurance Act including Workman's Compensation Act and Third Party Insurance and other relevant provisions particularly with reference to the requirement of taking insurance for the equipment during transportation, storage, erection testing & commissioning until defects liability period.The Bidders shall familiarize themselves especially with the rules and regulation applicable to the foreign firms for carrying out business in Afghanistan. BHEL shall not be responsible in any way for non-familiarisation of site conditions. Once the tenderer has quoted for the work, it is implied that he has ascertained various site condition and NO CLAIM whatsoever will be entertained by BHEL on any such account. The tenderer shall not claim at any time after the submission of the bid or subsequent execution of the Contract that there was any misunderstanding with regard to the conditions imposed in the Contract or prevailing at the site or in the country of Afghanistan

52.4 The contractor in the event of this work awarded to him, shall establish a site office at site and keep posted an authorised responsible officer who should hold a valid power

of attorney for the purpose of the contract. Any or order or instruction of the Engineer or his duly authorised representative shall be communicated to the contractor's representative at site office and the same will be deemed to have been communicated to the contractor at his legal address.

52.5 The Bidder and any of his personnel or agents will be granted permission by the Employer (BHEL's ultimate customer) to enter upon its premises and lands for the purpose of such inspection, but only upon the express condition that the Bidder, his personnel & agents, shall release and indemnify the Employer and his personnel and agents from and against all liability in respect thereof and shall be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as an result of the inspection.

52.5 The Contractor shall pay all taxes, duties, fee and obtain all permits, licensees and approvals as required by laws of India and Afghanistan in relation to the execution and completion of the work and remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so. The Contractor shall obtain copies of applicable laws in Afghanistan which are relevant to the contract as well as permits, licences and approvals which the Contractor is required to obtain for compliance with laws for delivery of goods including clearances through customs.

52.6 The Contractor shall jointly use with other Contractors and the WAPCOS, approach roads, access roads and adits, drainage and other facilities. The use of other Contractor's facilities shall be coordinated by the Engineer-in-Charge between the Contractors, if required, for execution of the Works connected with the project. (Cost, if any, on this account shall be settled between the Contractors concerned).

52.7 The use of common facilities shall be coordinated by the Engineer-in-Charge through meetings of various parties. In case of any conflict, the decision of the Engineer-in-Charge in the matter shall be binding on all the parties.

52.8 For the T&Ps and IMTEs and any other major item to be arranged by the contractor for this work, the Contractor, at his own cost shall carry out route survey upto the project site for assessing the transportation limitation in respect of weight & dimensions and identify the portion of the highway within Afghanistan which requires strengthening/widening of the bridges/culverts etc. for safe transportation of the Equipment upto the site . The Survey Report shall be submitted by the Contractor to WAPCOS. The Contractor shall use every reasonable means to prevent any of the highways or bridges communicating with or on the routes to the site from being damaged by any traffic of the Contractor or any of his sub-Contractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic, as will inevitably arise from the moving of Goods or his plant, Equipment and machinery and materials from and to the site, shall be limited, as far as reasonably possible, and so that no unnecessary damage may be occasioned to such highways and bridges. In case, however, highways and bridges are damaged on account of movement of any traffic of the Contractor, he shall be liable to restore the highways and bridges to their original condition at his expense.

52.9 In case of floods resulting in flooding of the work areas, the Contractor shall make his own arrangements at his own cost to shift goods, all his plant, equipment and machinery, materials including if any, supplied/issued by the WAPCOS and labour to safe place. The work shall be resumed after receding of floods and dewatering the area. BHEL/WAPCOS shall not be liable for any loss of or damage to the men, Contractor's

plant, equipment, machinery works or materials on account of these floods and no compensation whatsoever, in this regard shall be paid to the Contractor.

52.10 A pre bid meeting will be held for discussions/clarifications regarding the tender at PSNR Noida office ten days prior to due date of submission of bids.

SECTION III-B

3x14 MW SALMADAM HEP

SPECIAL CONDITIONS OF CONTRACT

INDEX

3X14 MW SALMA DAM HEP (AFGANISTAN)

SPECIAL CONDITIONS OF CONTRACT

SECTION III-B

53.0 SCOPE OF WORK

53.1 Scope of these specifications cover complete work of

(A) Complete material handling at site which includes unloading of all the incoming material of all packages including packages not in erection scope of PSNR but in scope of Bhopal, ISG and TBM groups of BHEL/their vendors, by truck/ trailer/ carriers, reporting damages, providing necessary helps in insurance claim lodging, shifting of material to open/ closed storage yards, proper storing and stacking, material verification and shortage reporting, material preservation as per instructions, On receipt of demand for material from erection site loading of material on truck/ trailer/ carriers, transporting the same to powerhouse/ erection place. The total material to be handled shall be approximately **1900T** but the contractor shall have no extra claim in the event of reduction/ increase of quantity of material. The details of total materials to be handled shall be as per **Annexure-I**. Accordingly the bidders are required to quote their rates against item No. 2 of rate schedule**. (*some* material*/equipment* shall be unloaded near stores /service bay by *EOT crane/Mobile cranes*. However Preservation and *record keeping* of same shall be in this scope of work)**

SNO	ACTIVITIES	QUANTITY
1	Turbine and Accessories	3
2	Main Inlet Valve and accessories	3
3	Digital Governing system and Accessories	3
4	HP and LP Compressed air system	1
5	Cooling water system	3
6	Drainage & Dewatering System	1
7	Generator and Accessories	3
8	Excitation System	3
9	Unit Control Boards	3
10	Electric overhead Travelling Cranes (75/ 15 T)**	1
11	Segregated phase Bus duct, LAVT, NGC including steel structure	3
12	17.25 MVA Generator Transformers	3
13	6 MVA Oil filled Transformers	1
14	800 KVA Oil Filled Transformer	2
15	500 KVA Dry Cast Resin Unit Auxiliary Transformer	3
16	110 KV Swtchyard Equipments (5 bays)	1
17	20 KV Metal Clad vacuum Switch Gear	4
18	415 V Unit Auxiliary boards**	3
19	415 V LT Boards**	2
20	415 V Station Service Boards**	2
21	415 V Switchyard distribution boards**	2
22	415 V Dam Distribution Boards**	2
23	220 V DC Batteries, Chargers, Distribution Boards	2

24	Central control unit, Interface panels, GPS based Synchronisation unit, Data communication equipments, Protection system	2
25	PLCC Equipment with 36 Telephones and 48 V battery station**	1
26	Fire Fighting System -Power House, Generator**	1 each
27	Mulsifier System for Transformers	1
28	Fire Fighting System (cable spreading room and oil handling room**	1
29	Public address System for PH, Transformer area, Switch yard area, **	1
30	Ventillation System and accessories**	1
31	500 KVA emergency DG set**	2
32	Electric Passenger Lift for 10 persons**	1
33	Lubricating Oil Purifier	1
34	Insulation Oil Purifier	1
35	Lubrication Oil Purifier (Portable Unit)	1
36	Insulation Oil Purifier (Portable Unit)	1
37	Illumination System**	1
38	Power, Control, Instrumentation cables, 24 KV XLPE, incl cable trays and accessories	3
39	Mechanical Work shop**	1
40	Electrical Laboratory**	1

** Erection under supervision of MU/vendor representative

(B1) Indenting and identifying material in store, receiving of material in service bay / at erection site, levelling, matching, assembly, fabrication, erection, alignment, welding, NDT (DPT, Radiography, UT etc.), Material Reconciliation, any other works and testing / Commissioning **to complete the work till handing over of first stage embedment and piping, Pier nose, Draft tube (PG201), Spiral casing, stay ring and second stage associated embedded piping (PG202) of 3x14 MW SALMADAM HEP.**

i) Assembly, welding, erection including NDT of Pier nose ,Draft tube exterior and interior painting. Installation, welding, pressure testing of the associated embedded pipes, drainage boxes etc.
ii) Assembly, welding, erection including NDT of stayring, spiral casing members including exterior and interior painting.
iii) Hydraulic testing of Spiral Casing
iv) Cutting/ welding of reinforcement bars wherever required.
v) Plugging/ welding of concrete holes used for pressure grouting after embedments of lower pit liner.
vi) Any other works to complete the erection/ installation of PG 201 & PG 202 materials.

(B2) Indenting and identifying material in store, receiving of material in service bay / at erection site, levelling, matching, assembly, fabrication, erection, alignment, welding, NDT (DPT, Radiography, UT etc.), testing / Commissioning & Trial run operation, assistance during efficiency testing of units, Material Reconciliation, any other activity to complete the work till **handing over of Francis Turbines, governors, MIV Butterfly Valves, Transformers, & associated equipments, Generators, Generator Fire Protection System, Excitation systems, control & monitoring systems, Protection System, Power & Control cables, Switchgear and bus Duct , Mechanical auxiliaries such as cooling water, drainage, HP & LP compressed air system of 3x14 MW SALMADAM HEP.** Details of the major equipment under scope of works have been given above under clause 53.1

53.2 The equipment and piping shall be erected in conformity with the provision of standard/ specification and as may be directed by BHEL. The method of welding (Arc, gas, TIG, MIG/MAG or other method) may be indicated in the detailed drawing/ schedules. BHEL engineer will have option of changing the method of welding as per site requirements.

53.3 On the discretion of BHEL site engineer, some of the material can be directly unloaded in the powerhouse/work site. Contractor shall keep record of the same. For such works contractor shall be paid under material handling package.

53.4 **EOT crane shall be installed by CONTRACTOR** under supervision of its vendor (EOT Crane vendor). The EOT cranes shall be provided to the contractor for the execution of work free of hire charges. The day-to-day routine maintenance shall be in the scope of the contractor for the period of crane being used for his scope of erection works. During the maintenance of the crane, the contractor shall arrange to replace any component, which is not available in stock . The actual cost of the component shall be reimbursed to the contractor by BHEL. The said contractor shall also deploy the requisite number of crane operators (one or two nos. operator simultaneously) as per the instructions of BHEL engineer for operation of the crane for his scope of work in connection with Electromechanical works of BHEL. The crane operator may have to work in overtime also depending upon the work conditions for which no extra shall be payable to the contractor. The said contractor will also provide the EOT crane services to the other contractors working in the powerhouse for civil and mechanical works.

53.5 Construction drawings and documents shall be provided at site to the successful bidder for erection of work:

53.6 Most of the items / consignments will be despatched directly to site by road. Details with weights & Dimensions of Major equipment supplied by BHEL to be assembled, installed, tested under this scope are given in **Annexure-I** However, changes in design may occur as is usual for which no compensation will be payable and contractor shall complete the entire work as detailed in the tender specifications within finally accepted rates/ prices. However some consignments mainly small parcels may also be received at Herat / Kabul through road/air. Contractor has to handle such consignments also. Payment shall be made as per the optional rates quoted.

53.8 The EOT crane shall not be available for the erection of first/second stage embedment / piping. The contractor has to carry out the works manually or by his own T&P within the scope of work.

54.0 FINISH PAINTING

54.1 Primer painting wherever peeled off or damaged or if required is to be carried out after thoroughly cleaning of all dirt, rust, scales, grease, oils and other foreign materials by wire brushing, scrapping, any other method as per requirement of BHEL and the same being inspected and approved by the engineer before painting. Bare surfaces / unpainted surfaces shall be provided with two coats of suitable primer. The gas cut stubs / weld seams would require to be cleaned / ground before painting. After applying the primer paints all the equipments / items shall be finished with two coats of enamel paint or any other paint as issued by BHEL. The exterior surface may have to be cement / coal tar painted as directed by BHEL

54.2 As the equipment/ items are to be spray painted, the contractor shall make arrangements of the required equipment for spray painting. Spray painting at the job/ site shall be permitted only items approved by the owner / Engineer.

54.3 While the primers and paints will be issued by BHEL as free issue item, all tools and other consumables including scaffolding materials required for finish painting shall be supplied by contractor within their quoted rate.

54.4 As per BHEL contract with customer, painting has to be guaranteed for a period of 5 years from taking over by customer.

55.0 FACILITIES TO BE PROVIDED BY BHEL/ CONTRACTOR

55.1 WAPCOS shall provide limited open space for site office and store free of rental charge. It is the responsibility of the contractor to construct temporary sheds for his use, and to dismantle and clear the site after completion of work or as and when required, as a part of his scope of work as per the instructions of BHEL Engineer.

55.2 BHEL/WAPCOS shall provide space for labour colony. Contractor shall have to build his own colony/ quarters for his workmen/ staff **OR** can take houses on rental basis in nearby places. Contractor shall be responsible for providing all necessary facilities to staff and workmen like construction of residential accommodation with electricity & water inside the rooms, proper sanitation, transport, medical facilities etc. at his own cost as required under various labour laws and statutory rules and regulations.

55.3 **Contractor has to arrange their own DG sets of adequate capacity for execution of complete scope of work including construction power within the awarded rates, since power is not available at site.**

55.4 **The contractor shall have to arrange the water for construction purpose by himself for powerhouse and stores within the awarded rates.** Any further distribution will also be the responsibility of the Contractor as a part of his work.

55.5 Provision of distribution lines of electrical power from the central points to the required place with proper distribution boards observing the safety rules laid down by the electrical authorities of the state shall be done by the contractor, supplying all the materials like cables, distribution board, switch boards, TPN, CBS, ELCBS/ MCCBS/ Copper/ Brass clamps, copper conductor, change over switches pipes etc. at his own cost. If any failure is caused in supply of the power and water, it is the responsibility of the contractor to make alternate arrangements at his cost. The contractor shall adjust his working shifts / hours accordingly and deploy additional manpower if necessary so as to achieve the targets.

55.6 No compensation for idle labour or extension of time for completion of work will be given to contractor unless provided for elsewhere in the tender.

55.7 Adequate lighting arrangement such as flood lights, hand lamps and area lighting shall be arranged by the contractor at the site of construction, storage area etc within finally accepted rates.

55.8 On completion of work **or** as and when required by BHEL, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and levelled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, the Engineer will get it done and expenses incurred shall be recovered from the contractor along with prevailing overheads. The decision of BHEL Engineer in this regard shall be final.

56.0 TIME SCHEDULE

56.1 The contractor is required to commence the work within 45 days from the date of issue of letter of intent unless BHEL decides to fix any other later date. However, BHEL Engineer will certify the actual date of start of work after adequate mobilisation of manpower, T&P and other pre-requisites as stated in the contract.

56.2 **Erection work is expected to commence from May/June - 2009. Erection, testing, commissioning and trial run operation as detailed in the tender specifications shall be completed within 16th, 17th & 18th months for three units respectively from the date of start of erection work. Assistance for efficiency testing (within 6 months of completion of trial run operation of last unit) shall be provided by the contractor. The contractual period against this tender shall be 20 months from the date of start of erection work. This Schedule may have to be compressed by one month. No extra charges will be paid on this account.**

56.3 The work under the scope of this contract is deemed to be completed in all respects, only when the contractor has discharged all the responsibilities laid down in the contract. The decision of BHEL on completion date shall be final and binding on the contractor.

57.0 OVER RUN

57.1 In case due to reasons not attributable to the contractor, the work of erection, testing, commissioning and trial run gets delayed and scheduled completion gets extended, the contractor shall not be entitled for any over run compensation for a period of two months after the contractual completion date. In case the scheduled completion time gets extended beyond two months as stated above, the contractor shall be considered for payment of fixed over run charges as detailed hereunder;

57.1.1 For the delay pertaining to erection, testing, commissioning and trial run, the overrun charges shall be payable after expiry of grace period of two months and the total period of overrun shall be considered upto successful completion of trial run of the last unit plus one month. The over run charges shall be payable @ USD 8,000/- PM (US Dollars Eight Thousands per month)

57.1.2 In case efficiency test gets extended beyond the period mentioned above in clause no. 57.1.1, the over run charges payable for this extended period shall be @ USD 2500/- PM (US Dollars Two Thousand Five Hundred Per Month).

Over run charges shall be payable on receipt of advance notice intending to claim over run and on fulfilment of following conditions;

a) The reasons for delay in completion of work are not attributable to contractor but however subject to the provisions of clause – 31.
b) The targets fixed during the over run period are achieved by contractor.

NOTE: The total overrun charges shall not exceed 10% of the contract value.

57.2 Once the claim of over run charges is admitted no other compensation whatsoever (like for delays in receipt of materials, availability of fronts etc.) will be entertained.

57.3 The contractor shall maintain sufficient work force and other resources required for completion of the job expeditiously for the entire contractual period including total extended period.

57.4 The over run charges shall be applicable with the completion of material handling packages works. If the reason not attributable to the contractor the works of erection/ installation gets extended beyond the stipulated total period, the over run charges may also be considered for these works.

58.0 INSURANCE

58.1 All equipment will be insured by M/s BHEL upto the time of completion of their erection, testing and commissioning within the comprehensive MCE policy. The MCE policy so taken shall have provisions for deductible franchise during erection and during testing. Subject to provisions of GCC clause No. 29.0 the deductible franchise shall be borne by contractor. The Contractor shall take an insurance policy for all the workmen employed by him against accidents and injuries as per the statutory/local requirements. The insurance of contractor's T&Ps/IMTEs and other materials shall be the responsibility of contractor at their own cost.

59.0 TERMS OF PAYMENT-

59.1 PAYMENTS WILL BE MADE IN USD IN AFGHANISTAN. However, if so desired by the contractor and accepted by BHEL, an amount limited to 50 % of the contract value can be paid in Indian Rupees in India keeping in view the laws prevailing in India and Afghanistan. Any conversion charge, which may incurred at the time of payment in converting equivalent US$ into Indian Rupees, shall be borne by the Contractor. The amount of such conversion shall be as mutually agreed between BHEL and the contractor and also keeping in view the laws prevailing in India and Afghanistan.

59.2 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.

59.3 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.

59.4 Shortage / damage reports to be submitted on BHEL standard materials management forms. No payment shall be released till the contractor submits these reports and are verified by the Engineer.

59.5 Subject to any deduction which BHEL may be authorised to make under the contract, the contractor on the certificate of the Engineer at site be entitled for payment as explained hereunder ;

(A) ADVANCE PAYMENT

(a) 5% of the contract value shall be paid as interest bearing advance in US DOLLARS (USD) against submission of a Bank Guarantee as per BHEL format given at annexure – XIV of this NIT for an amount equal to 1.25 times of advance valid for 24 months initially and thereafter extension for a period upto which the advance is fully adjusted. The interest chargeable shall be Prime Lending Rate of State Bank of India plus 2%.

The BG should be issued preferably through any of the Member Banks listed in the GCC. The BG may also be accepted from a Foreign Bank at the sole discretion of BHEL, provided the BG is duly endorsed by any bank of the BHEL's Member Bank listed in the GCC 'OR' any Nationalized Bank in India.

(b) The advance paid shall be recovered from the contractor's progressive bills to an extent of 10% of each progressive bill amount till it is fully recovered. The BG amount shall be allowed to be reduced every six months by an amount equal to the amount adjusted against running bills.

(c) The BG shall be returned after full adjustment of the entire amount of advance along with interest.

(B) ITEM 1 OF THE RATE SCHEDULE- ERECTION
(70% of total contract value)

90% of contract rate for Erection, testing and commissioning and trial run portion against item No.1 of rate schedule shall be payable as detailed in **Annexure 'A' enclosed**.

(C) ITEM 1 OF THE RATE SCHEDULE- MATERIALS HANDLING- (10% of total contract value)

(i) 50% of the rate for materials handling shall be payable on prorata basis for material handling after the materials are safely unloaded and recorded, verified in line with documents and records such as GR/LWB/loading advice/box packing slip/Daybook, Safekeeping/stacking, proper verification and proper preservation of materials/ equipments as per BHEL standards/ practices, opening of cases/ repacking, wherever necessary (with contractors own T&P and labour). Submission of information as per Material management forms by contractor immediately after verification of materials as certified by Engineer. Required Performa would be supplied by site.

- Proof of claim lodged with Transporters/Carriers in respect of shortage/open delivery.
- Material Management forms duly/Records generated in stocks (Stock registers and computers) and certified by Engineer.

NOTE: Further break-up of above terms of payment, if required can be carried out at site entirely at the discretion of BHEL site engineer.

(ii) 40% of the rate for materials handling shall be payable on prorata basis after transportation of materials/Equipment including loading from project(stores)/closed storage sheds to powerhouse/work site, unloading with own arrangement and handing over to erection site

(D) ITEM 1 OF RATE SCHEDULE- Infrastructural Works & Facilities to be provided as per as per Annexure-VIII of this NIT - (20% of total contract value)

50% of the rate shall be payable on prorata basis after completion of all infrastructural works as per contract and certification of BHEL engineer.

2% of the rate every month for 20 months on satisfactory maintenance of facilities to the satisfaction and certification of BHEL engineer.

(E) ITEM 2, 3 & 4 OF RATE SCHEDULE/OPTIONAL RATES

90% of these rates shall be payable on prorata basis after materials are loaded in trucks/trailors from stacked area, transported and unloaded at requisite place with his own arrangements / with EOT crane and proper handing over to transporter or vice-versa /construction of office premises.

(F) Balance 10% of the Total Contract Value shall be payable as under;

i). 5% of the above value shall be payable on completion of all pending works, which includes settlement of all outstanding issues, reconciliation of material wherever required, area cleaning etc.

ii) The balance 5% of the above value will be payable after 3 months on contractors discharging his responsibilities as stipulated in this contract and on passing of final bill. The certificate of Engineer regarding such approval and passing of sums shall be final and conclusive against the contractor.

Notes: (i) Above payment at (F) above shall be released after adjustment of the contract value based on actual work carried out.

(ii) **Handling of items issued from BHEL stores for storing, stacking of materials and their return shall be carried out without any extra cost and within the awarded rates**

(iii) **For infrastructural works and facilities to be provided by the contractor, bidders to consider 20 months period. For these facilities beyond 20 months , facilities required and their rates shall be mutually discussed and finalised.**

60.0 LIQUIDATED DAMAGES(LD)

For delay in completion of work attributable to the contractor, the LD shall be applicable at the rate of ½% of the contract value per week of delay or part thereof limited to a ceiling of 10% of the contract value as mentioned under clause no.25.5 of the GCC of the tender.

61.0 SECURITY DEPOSIT

The contractor shall submit Security Deposit within 15 days from the date of issue of LOI as per clause no. 16.2 of the General Conditions of Contract (GCC). In case the contractor opts to furnish Bank Guarantee as a part of Security Deposit, the BG shall be issued as per the Performa enclosed as per Annexure-H of the GCC and also that the BG should be issued from any of BHEL's Member Bank listed in the General Conditions of Contract (GCC) of this NIT 'OR' RBI approved bank in Afganistan. The BG may also be accepted from a Foreign Bank at the sole discretion of BHEL, provided the BG is duly endorsed by any of the BHEL's Member Bank listed in the GCC 'OR' any Nationalized Bank in India.

For BG through any other Nationalized Bank (Not covered in the list of Member Banks of GCC), the discretion of its acceptance shall lie solely with BHEL.

62.0 COMPLIANCE TO REGULATIONS AND BYELAWS

62.1 The governing law to which the Contract is to be subjected and according to which the Contract is to be construed shall be applicable Laws in India and Afghanistan. All national (or state) Legislation, statutes, ordinances & other laws, regulations & by Laws of any legally constituted public authority in Afghanistan shall be obeyed so far as the operation of the Contract in the country is concerned. However, all the litigation on the Contract shall be under jurisdiction of the court of Delhi.

62.2 The Contractor shall pay all taxes, duties, fee and obtain all permits, licensees and approvals as required by laws of India and Afghanistan in relation to the execution and completion of the work and remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so.

62.3 The Contractor shall obtain copies of applicable laws in Afghanistan which are relevant to the contract as well as permits, licences and approvals which the Contractor is required to obtain for compliance with laws for delivery of goods including clearances through customs.

62.4 In their own interest, the Bidders are required to familiarize themselves with the Income tax Act, Companies Act. Custom Act, Prevailing labour laws & other related Acts and Laws prevalent in India & Afghanistan. Further, the Bidders are required to comply with the Insurance Act including Workman's Compensation Act and Third Party Insurance and other relevant provisions particularly with reference to the requirement of taking insurance for the equipment during transportation, storage, erection testing & commissioning until defects liability period.

62.5 The Contractor and his expatriate personnel shall observe/respect all Afghanistan Act, Laws, Rules and Regulations and shall not in any way interfere with Afghanistan political and religious affairs and shall meticulously follow any other Rules and Regulations which Govt. of Afghanistan, the WAPCOS and the Engineer-in-Charge may impose on them from time to time. The Contractor's expatriate personnel shall work and live in close co-operation with their co-workers and the community and shall not engage themselves in any other employment either part time or full time nor shall they take part in any local politics.

63.0 DEFECTS LIABILITY:

(i) Defects Liability Period

a) The expression "Defects Liability Period" shall mean a period of Twelve months from the date the works are taken over by BHEL's customer WAPCOS and the Taking over Certificate is issued by them. Where any part of the works is taken over separately. The Defects Liability Period for that part shall commence on the date it was taken over.

(ii) Notice of Defects

If any defect appears or damage occurs during the defect liability period, the Engineer shall forthwith notify the Contractor thereof. However, delay or failure of the Engineer in notifying shall not relieve the Contractor from his liability for remedying the defects at his own cost.

(iii) Making Good Defects.

Upon receipt of such notice, the contractor shall be responsible for making good any defect in or damage to any part of the Works which may appear or occur during the Defects liability Period and which arises from either.

a) Any defective materials, workmanship or design, or
b) Any act or omission of the Contractor during the Defects Liability Period

The Contractor shall make good the defect or damage as soon as practicable and at his own cost

(iv) Extension of Defects Liability Period

The provisions of this Clause shall apply to all replacements or renewals carried out by the Contractor as if the replacement and renewals had been taken over on the date they were completed

The Defects Liability Period for the Works shall be extended by a period equal to the period during which the Works can not be used by reasons of a defect or damage. If

only a part of the Works is affected, the Defect Liability Period shall be extended only for that part.

In neither case shall the Defects Liability Period be extended by more than twelve months.

(v) Failure to Remedy Defects

If the Contractor fails to remedy a defect or damage within a reasonable time, the Engineer may fix a final time for remedying the defect or damage.

If the Contractor fails to do so, BHEL may carry out the work himself or by others at the Contractor's risk and cost. The costs actually incurred by the Engineer-in-Charge in remedying the defect or damage shall be recovered from any payments due or which may become due to the Contractor.

(vi) Removal of Defective work

If the defect or damage is such that repairs can not be expeditiously carried out on the site, the Contractor may, with the consent of the Engineer and after furnishing a proper security acceptable to the W APCOS in case the item is paid for, remove from the site, for the purposes of repair, any part of the Works which is defective or damaged.

(vii) Further Tests on Completion.

If the replacements or renewals are such that they may affect the performance of the Works, the Engineer may request that the Tests on Completion be repeated to the extent necessary The request shall be made by notice within thirty days after the replacement or renewal.

64.0 FORCE MAJEURE:

(i) Definition of Force Majeure

Force Majeure means any circumstances beyond the control of the parties, including but not limited to:

(a) War, and other hostilities, (whether war be declared or not), invasion, act of foreign enemies, requisition or embargo;

(b) rebellion, revolution, insurrection, military or usurped power and civil war;

(c) ionising radiation or contamination by radio activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel. radio-active toxic explosives, or other hazardous properties of any explosive nuclear assembly or nuclear components thereof;

(d) riot, commotion or disorder, except where solely restrict to employees of the Contractor or of his sub-contractors.

(e) Earthquake, floods affecting Contractor's work.

(ii) Effect of Force Majeure

Neither party shall be considered to be in default or in breach of his obligations under the Contract to the extent that performance of such obligations is prevented by any circumstances of Force Majeure which arise after the date of the Letter of Award or the date when the Contract becomes effective, whichever is the earlier.

(iii) Notice of Occurrence.
If either party considers that any circumstances of Force Majeure have occurred which may affect performance of his obligations, he shall notify the other party within one week of occurrence of such event.

(iv) Performance to Continue.
Upon the occurrence of any situation of Force Majeure, the Contractor shall endeavour to continue to perform his obligations under the Contract so far as reasonably practicable. The Contractor shall notify the Engineer-in-Charge of the steps he proposes to take, including any reasonable alternative means for performance which is not prevented by Force Majeure. The Contractor shall not take any such steps unless directed so to do by the Engineer-in-Charge.

(v) Termination. in Consequence of Force Majeure
If circumstances of Forces Majeure have occurred and shall continue for a period of twelve months then, notwithstanding that the Contractor may by reason thereof has been granted an extension of Time for Completion of the Works, either party shall be entitled to serve upon the other 30 days notice to terminate the Contract. If at the expiry of the period of 30 days, Force Majeure shall still continue, the Contract shall be terminated.

(vi) Payment on Termination for Force Majeure
If the Contract is terminated under Sub clause (v) of this Clause, the Contractor shall be paid the value of the work done.

The Contractor shall also be entitled to receive:

(a) The amounts payable in respect of any preliminary items so far as the work or service comprised therein has been carried out and a proper proportion, as certified by the Engineer-in-Charge, of any such item in which .the Work or service comprised has only been partially carried out,

(b) The cost of materials or goods reasonably ordered for the Works or for use in connection with the Works which have been delivered to the Contractor or of which the Contractor is legally liable to accept delivery. Such materials or goods shall become the property of WAPCOS when paid for by it and the-Contractor shall place the same at the WAPCOS's disposal.

(c) The amount certified by the Engineer-in-Charge, being the amount of any expenditures which in the circumstances was reasonably incurred by the Contractor in the expectation of completing the whole of the Works insofar as

such expenditure shall not have been covered by any other payments referred to in this Sub-Clause.

Terrorist activity will be treated as Force Majeure and will be dealt as per relevant clause.

65.0 OTHERS

65.1 In case of any contradiction between General Conditions of Contract(GCC) and Special Conditions of Contract (SCC), the latter shall prevail.

65.2 The tenderer shall specifically confirm he has inspected the site of work and is fully conversant with the prevailing conditions under which work is to be executed and will not raise claim of any nature due to lack of knowledge of site condition. He will also confirm that local taxation laws at the site have been clearly understood by him.

65.3 The Contractor, at his own cost shall carry out route survey upto the project site for assessing the transportation limitation in respect of weight & dimensions and identify the portion of te highway within Afghanistan which requires strengthening/widening of the bridges/culverts etc. for safe transportation of their Equipment upto the site. The Survey Report shall be submitted by the Contractor to WAPCOS.

65.4 The Contractor shall use every reasonable means to prevent any of the highways or bridges communicating with or on the routes to the site from being damaged by any traffic of the Contractor or any of his sub-Contractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic, as will inevitably arise from the moving of Goods or his plant, Equipment and machinery and materials from and to the site, shall be limited, as far as reasonably possible, and so that no unnecessary damage may be occasioned to such highways and bridges. In case, however, highways and bridges are damaged on account of movement of any traffic of the Contractor, he shall be liable to restore the highways and bridges to their original condition at his expense.

65.5 The price bids of only those bidders will be opened who will be qualified for the subject job on the basis of pre-qualification evaluation/Techno-commercial bids and acceptance of customer. BHEL reserves the right to reject bidders with unsatisfactory past performance in execution of a contract. BHEL's decision in this regard shall be final & binding.

Annexure-A

SALMA 3X14MW HEP

BILLING BREAK UP OF

STORAGE, INSTALLATION, TESTING AND COMMISSIONING

SNO	ACTIVITY	UNIT NO				TOTAL (% of CV)
		I	II	III	COM	
A	**TURBINE**					
1	Alignment and positioning of D/T sections, Welding, NDT and handing over of draft tube for concreting	1.0	1.0	1.0		3.00
2	Installation of stay ring in place, Assembly & welding of spiral casing, Hydraulic testing of spiral casing	2.0	2.0	2.0		6.00
3	Lowering of Turbine shaft in pit, guide apparatus incl servomotor assembly	2.0	2.0	2.0		6.00
4	Erection of OPU (Turbine).	0.5	0.5	0.5		1.50
5	Erection of Grease Lubrication System	0.5	0.5	0.5		1.50
6	Erection of HMC, electronic cabinet of Governer for turbine, oil pipe lines	0.75	0.75	0.75		2.25
7	Assembly of MIV in service bay, lowering of MIV in position, Jointing of inlet/ outlet pipes, Installation of servomotor, oil & water pipe lines	1.75	1.75	1.75		5.25
B	**GENERATOR**					
1	Assembly, testing of stator in service bay, Dressing of foundation, Installation of stator in pit	2.0	2.0	2.0		6.00
2	Assembly, testing of rotor in service bay, Lowering of rotor in position	3.0	3.0	3.0		9.00
3	Assembly of Lower bracket, top bracket in service bay, its lowering in position	2.0	2.0	2.0		6.00
C	**ELECTRICAL SYSTEMS**					
1	Installation of generator Transformers	2.0	2.0	2.0		6.00

2	Installation of Unit Auxiliary, Excitation, Station Transformers	0.5	0.5	0.5		1.50
3	Installation of Unit SP Bus Duct, Unit Control & Auxiliary board.	1.5	1.5	1.5		4.50
4	Installation of static excitation, Generator Protection system	0.5	0.5	0.5		1.50
D	**COMMON SYSTEMS**					
1	Installation of EOT crane, load testing				1.0	1.00
2	Installation of DG SETS				1.0	1.00
3	Erection of Unit HP & LP air compressors				1.0	1.00
4	Installation of Cooling water system, Drainage and Dewatering System	0.5	0.5	0.5	0.50	2.00
5	Generator Fire Fighting system				0.50	0.50
6	Installation of PLCC, EPBAX				1.00	1.00
7	Installation of 220 V Batteries, DC Boards				1.00	1.00
8	Installation of station Bus Duct, Station, Dam Distribution, Main / sub distribution, Auxiliary and 20KV board.				1.00	1.00
9	Installation of station Fire Fighting System, Public Addressal system				1.00	1.00
10	Instalation of cable trays, control and power cables for unit and station				2.00	2.00
11	Installation of illumination system, Ventillation system				1.00	1.00
12	Installation of Passenger lift				1.00	1.00
13	Electrical Lab & Mechanical Workshop				0.50	0.50
14	Installation of Oil handling system, purifiers				0.50	0.50
15	Installation of SCADA, Control room panels				0.50	0.50
E	**110 KV SWITCH YARD**					
1	Installation of structures,				1.00	1.00
2	Installation of Circuit Breakers, CT, VT, Isolators, conductors				1.00	1.00
3	Installation of cable trays, accessories, cables and its terminations, LT Boards				1.00	1.00

F	**UNIT BOXING UP, SPINNING, TESTING, COMMISSIONING**								
1	Combined Unit Axis Alignment				1.00	1.00	1.00		3.00
2	Setting of berings, brackets, Boxing up of Unit				1.00	1.00	1.00		3.00
3	Testing of unit controls and auxiliary panels				1.00	1.00	1.00		3.00
4	Spinning of unit.				0.50	0.50	0.50		1.50
5	Synchronisation of unit.				0.50	0.50	0.50		1.50
							TOTAL		90.00

ANNEXURE-B

SALMA DAM HEP 3 X 14 MW

Detailed scope of work is as given below.

1. Each turbine comprising mainly of

- Embedded parts namely, pier nose liner supplied in single piece, draft tube elbow liner supplied in 2 segments, draft tube cone in one piece, primary embedded piping etc.

- Foundation parts namely, stay ring in single piece, spiral casing in 9 segments, secondary embedded piping, pit liners etc. Upper pit liners supplied in two halves and lower pit liner in single piece. The spiral shall be kept pressurized during concreting.

- Set of guide apparatus (20 nos. guide vanes) & servomotors, guide bearing, shaft sealing, runner in single piece, shaft, head race tail race level measuring devices complete with associated instrumentation, cabling works and other standard assemblies etc.

- Along with associated equipment.

2. Main inlet valve: 2060 mm diameter Butterfly valve including inlet pipe for B.F. valve with taper piece in single piece, outlet pipe for B.F. Valve in single piece, Service seal(main seal) Maintenance seal on D/S side, levers, servomotors, Bypass valve, air release valve. The main body is in two halves bolted together and supplied in assembled condition at site. The valve door is fabricated.

3. Digital Electronic Hydraulic Governors comprising of hydro mechanical cabinet, micro processor(Max DNA based) EHGC, hydraulic over speed device, common Oil Sump Tank for turbine and MIV, common Oil Pressure receiver for turbine and MIV, oil leakage units, moisture detectors, oil level relays, pressure transmitters, Electrical transducers, emergency slide valve, Electromagnetic type flow meter, Temperature scanner, oil level indicator & controller, Head/tail race measuring equipment and feedback mechanism along with piping, associated equipments and spares

4. 75/15 ton, EOT crane complete with crane rails with foundation and clamping device, down shop load etc. It includes set of mandatory spares for O & M.

5. Each generator comprising mainly of

- The wound stator shall be dispatched to site in three segments. The stator frame A/F is 6730 mm and height is 2400 mm. Joint winding of stator has to be carried out at site. HV test is to be carried out on complete stator at site. The thrust collar is separate which is to be pressed / assembled at site, air coolers, anti-condensation pit heaters and control panels,
- Rim type rotor to be assembled at site around the spider having 20 no. poles, slip rings, brush gear,

- Assy of molded air guides while maintaining proper gaps with fans to suit the assembly at site.
- thrust and guide bearing in lower bracket and a guide bearing in upper bracket along with plug in type oil coolers.
- brake & jack system, HS lubrication system, carbon dust collection system for slip rings, brake dust collection system consisting of extraction unit, hoppers, hoses etc
- upper and lower brackets, upper and lower air baffles, generator covering sheets, turbine pit cover sealing,
- cooling water system with starter panels, flow, pressure, temperature monitoring and necessary regulating/ check valves etc,
- CO2 type fire extinguishing system.,
- various indicating & measuring instruments and devices like over speed, vibration monitoring, temperature, SSG, moisture detectors in oil, limit switches, shaft current monitor etc,
- various foundation plates, foundation bolts, barrel access door, lighting arrangement for barrel, dome and turbine pit areas, various instruments/ control devices etc,
- Blue matching of bearing pads with shafts and of load components of thrust bearing thrust bolt, thrust block etc with corresponding parts shall be carried out,
- along with associated equipment.

6. Static excitation system for the generator have microprocessor based controls. The excitation equipment shall comprise of rectifier, power transformer, thyristors, field circuit breaker with discharge resistor, field flushing circuits, AVR and protection and control devices & accessories JB's and its wiring etc along with associated equipment

7. 12 KV, three phase segregated phase Bus ducts mainly comprising of main bus duct connecting generator line side to Generator Transformer and generator neutral terminals to NG cubicle, tap off bus duct for SAVT, UAT, Dynamic Breaking Switch and Excitation transformer, LAVT cubicles, NG cubicles, galvanized steel structures, earthing switches etc along with various rubber bellows, seal off bushings, CTs and other associated equipment. Field tests during erection/ commissioning current carrying capacity, voltage withstand test etc. Connection and disconnection of various shorting links etc during pre-commissioning and commissioning is included in this contract.

8. 110 kV switchyard equipment comprising of outdoor type 110 kV SF6 Gas filled CBs, complete with control cabinet & marshalling kiosk, motor operated spring charged gas monitoring instruments, operating mechanism, terminal connectors, supporting structures with fittings, cables etc., CTs, PTs, VTs, Surge Arrester, isolators and associated items.

9. 20 kV Metal Clad Switchgears Accessories comprising of Vacuum Circuit Breakers, CTs, VTs, Bus Bar and necessary devices.

10. 415 V AC Switchgear equipment comprising AC SSB, UAB, s/yard AC distribution board, dam site distribution board complete with all accessories.

11. DC system includes mainly 220 V DC Batteries, Battery Chargers and DC Board.

12. Generator transformers 17.25 MVA, 11/110 kV three phase, ynD11 oil immersed, ONAN/ONAF cooled outdoor type along with set of valves, piping, hangers, hardware, CW system consisting of radiators & coolers etc, oil , rails and other associated equipment.

Station supply transformer 6 MVA, 20/110 kV three phase, Dyn11, oil immersed, ONAN cooled, outdoor type along with along with all fittings & accessories.

Station auxiliaries transformers 800 kVA, 20/0.415 kV three phase, Dyn11, oil immersed, ONAN cooled, outdoor type along with all fittings & accessories.

All routine tests except HV test shall be conducted at site. The connection on HV side to the 110 kV overhead lines shall be done by other contractor and not in the scope of this work.

13. Auxiliary Transformers as below,
500KVA , 11/0.415 kV, three phase , metel enclosed cast resin dry type unit aux. transformers & accessories

14. The total Control & Monitoring system (SCADA) is divided into following two parts for the lower and upper level of controls.

Control & Monitoring at lower level for unit and other auxiliaries from individual local control stations to be located in the machine hall nearby the generating units, control bay etc.
Overall control & monitoring of the power plant at the upper level from operator work station in the central control room

Control & Monitoring system shall consist of three functionally identical , completely independent, auto sequencer system comprising of MAX DNA DCS based system, unit control boards, UCB and computers for various locations, VDUs, printers, power supply system, three nos. of operator work station, one engg station, operator station, one laptop based operator work station, HMI, one set of Mosaic Mimic Board, one set of CAD station, UPS with VRLA battery system and Remote processing unit. Process control networks and power house LAN, power and control cable including central alarm & annunciation panels synchronizing panels, automatic energy metering system with panel in central control room, instruments, relays, and loose power and control cables for all above equipments along with associated equipment. Commissioning of all this system shall be carried out by BHEL engineers. However erection associated cabling works and all assistance for Pre commissioning and commissioning the same shall be provided under the scope of this work.

15. Protection system includes relays & control panel for generator, generator transformers, excitation transformers, UAT, SSTs, bus bar, 110 KV feeders, relay testing kits etc.

16. PLCC equipment with 48V DC Supply system & EPBAX system and Associated Accessories comprises coupling devices, line traps, carrier terminals, protection couplers, HF coaxial cables, trunk selectors, automatic exchange, maintenance and testing equipment, 48 V SMPS (Switch Mode Power Supply) based DC power supply units Valve Regulated Lead Acid (VRLA) battery bank with 200 AH capacity & EPBAX system along with telephone sets (36 nos.).

17. Fire Fighting, Fire Detection and Service water supply system and Public Address System includes Hydrant Service System complete with complete with pipings and fittings, Automatic high voltage water spray system for main generator transformer, Medium Velocity sprayer system for cable spreading room & Oil Lubrication Room, Fire Alarm and main fire protection panels alongwith control cables, cable trays with the required accessories, Fire Detection and alarm system in control, HT & LT and DG set rooms including smoke detectors, Public address system for PH, transformer area, s/yard building and s/yard area.

18. Ventilation system includes fans, control panel having necessary instruments for controlling motors, wire mesh type filters, air control devices, isolating devices & steel structures.

19. Emergency power supply system consists of 500 kVA DG sets are comprising of speed governor, fuel system, air intake & exhaust system, with auto AMF panel and cold starting unit, battery & battery charger, piping, cabling, galvanizing, cable glands, base frame, foundations, material & spares, control system, switchgear, CTs, PTs and common 5000 litres storage fuel tank O & M works are in contractor's scope.

20. Electrical Passanger Lifts for 10 nos. passengers covering a load of 680 Kg with all accessories and fittings, embedded parts etc.

21. One set of Oil Handling and Purification System is comprising of one set of Lubrication Oil Handling system with all necessary equipments, one set of Insulating Oil Handling system complete with all necessary items, one no. of portable oil purifier, one no. of vacuum pump unit and two nos. of Barrel pumps with accessories.

22. Illuminatiion system includes Luminairs, lamps, Receptacles, Ceiling Fans, Distribution Boards, Lighting poles, Switches & Boards, Junction Boxes and Light indiacaters, Wires and Cables, GI Conduit with Accessories and GI wires of appropriate length.

23. Power, control and instrumentation cables complete with cable terminals, accessories, trays/ support structures, cabling/-wiring, embedments, fixures, proper dressing, identification tags, clamping of cables on trays for all the hydro generating equipment, transformers, bus ducts, along with associated items & auxiliaries, special tools and equipments for installation and maintenance of cables. BUT excluding the cabling for switchyard & transmission line, few BOPs namely EOT cranes, fire fighting system.

24. One Mechanical workshop equipments & one Electrical Laboratory Equipment includes one no. each of Centre lathe, power hacksaw, Pedestal Drilling M/C,

Pipe threading & Bending Machine, Electric Welding Machine, Gas Welding Machine, Eletrode Oven, Vice, Tripod with Chain Pully, Portable Tools, Wooden Work Bench, Measuring Equipment, Four Wheeled Platform Trolly, Capacity (2T) and Vacuum Cleaner (Industrial).

25. Cooling water system shall comprise of open loop type cooling water circuit for generator air coolers, generator and turbine bearing coolers, turbine shaft seal cooling, Governor/MIV oil sump tank and HP & LP Coolers. Raw water system of each shall be tapped from penstock and pass through the automatic strainer and pressure reducing orifices and then led to the oil and air coolers and then through pump, self cleaning duplex filter, motorized valves, heat exchangers, instruments, piping, fittings etc and discharged to tail pool.

26. Drainage water systems along with piping, valves, fittings, starter panels, water tight manhole doors, two identical pumps (one stand by) and associated equipment for drainage of seepage and leakage water to the tail pool. All seepage and leakage water is led by gullies and embedded drain pipes to drain sump at the bottom of the pit and then pumped to to tail pool.

27. Dewatering system comprising of pumps/motors along with piping, indicating & measuring instrumentation, level gauges, watertight doors, starter panels and other associated equipment for dewatering of turbine and draft tube passages. Two dewatering pumps shall be provided for the dewatering the water from dewatering sump adjacent to drainage sump to tail pool. One additional dewatering sump of size 1000x1000x1000 with one additional submersible pump inside it shall be provided for the emergency cases like floods etc. The discharge pipe will be laid separately for discharging the water into the tail pool.

28. One set of HP Compressed air system for supplying pressurized air to governor, inlet valves, generator brakes etc. It comprises of two (one standby) numbers AC motor driven air cooled air compressors, an air receiver of suitable capacity for pressure oil system for turbine and main inlet valve and for air supply to the brakes, pipings, fittings, supports, adequate nos. of isolating valves, pressure reducers etc. One LP pressure receiver with safety valve, pressure gauge and manual drain drop shall also be provided. The air to generator brakes and shaft gland isolating seal shall be supplied from this receiver.

29. One set of Centerlised LP Compressed air system for the purpose of providing general compressed air requirements of power house with emergency provision for generator brake and to operate pneumatic tools in workshop, in the machine hall and for maintenance purpose generally. It comprises of two reciprocating compressors (one standby), dryers, air receiver, fittings, instruments, valves, piping, starter panels along with piping and other associated equipment .

30. Erection of 1st stage embedded, 2nd stage embedded and surface/ exposed air, oil, water or any other pipelines for all above systems including fabricating/making site bends, cleaning, clamping, flushing, hydraulic testing as per drawing requirements and standard practices etc. Pipes shall in general be supplied in straight lengths and to be bent at site as per requirement. For

medium and large size pipes, regular bends may not be supplied and therefore bends shall have to be fabricated at site.

The ends of the pipelines shall be kept covered during concreting and/or other civil works. Thermal insulation of the pipelines as per requirements given in the relevant drawings of different systems shall be done at site.

31. Finish painting of equipment as per drawing requirements.Paints shall be supplied by BHEL. Painting may also be required on embedded / foundation parts prior to concreting etc.

32. Some of the main tests apart from the routine tests during erection, pre commissioning and commissioning shall include HV, SCC, OCC, load rejection tests upto 110 %, emergency stop tests, over speed tests, turbine & generator output tests, vibration measurement & balancing, etc on all units and field efficiency test and type test on one unit. Inspection of the units shall be carried out after load throw off tests and re-tightening of wedges, fasteners etc if required shall be carried out.

33. Any other works required to be carried out which have not been explicitly mentioned above but are essentially required to be carried out to complete the individual assemblies and the unit/ units as a whole including pre commissioning and commissioning.

BRIEF DESCRIPTION OF TURBINE

Embedded parts: The embedded parts comprise mainly of pier nose liner, draft tube knee lining, draft tube cone and embedded pipelines in primary concreting.

The pier nose liner is supplied in single piece weighing 0.9 tonne and is of 1500 mm in length and 1463 mm wide.

The draft tube knee lining weighing approx 6.91 tonnes with inlet diameter 2280 mm and rectangular outlet section 6161 mm wide & 1317 mm high is fabricated from 8 mm thick plate and is supplied in 2 pieces. 56 no. holes of Φ100 mm have been done in the lower portion of the lining for concreting which are to be plugged at site. After concreting, grouting holes, wherever required, shall have to be done at site and plugged after grouting. All butt weld joints and plugs shall be checked by 100 % dye penetration during erection 6 no. foundation plates have been foreseen for pedestals of draft tube knee lining.

The draft tube cone is supplied in single pieces and weighs app 4.85 tonnes. On the top, cone is bolted to extended foundation ring and at bottom, it is bolted with draft tube liner by 40 nos. M36 bolts. Top and bottom diameters of cone are 2015 and 2280 mm respectively.

The embedded pipelines weighing total about 8.79 tonnes for all units have been foreseen in primary concreting which mainly comprise penstock drain, draft tube drain, sleeve for drainage valves, air supply line, pressure relieving

pipe from top cover etc,. The drainage boxes of draft tube and penstock drain are to be welded at site. All welding shall be checked by DP at site.

The embedded tubes for field efficiency test of turbine weighing 17 T approx for all the units has been foreseen. Major portion of this piping will be embedded in first stage concreting, rest is exposed piping.

Foundation parts: The foundation parts comprise mainly stay ring, spiral casing, inlet pipe with taper piece for BF valve, outlet pipe for BF valve, foundation ring, lower and upper pit liner and embedded pipes in secondary concreting.

The stay ring with outer diameter approx. 3150 mm, throat height of 587 mm and weighing approx 05 tonnes is supplied in single piece. Center line of the stay ring is at EL 1549.56 mtrs. It is bolted with M30 studs & nuts to turbine top cover at top and pivot ring at bottom.
The spiral casing is approx 12 tonnes in weight with inlet diameter of 2074 mm. The spiral casing is supplied in about 9 segments with plate thickness varying from 16 to 20 mm which are to be finally matched, assembled, and welded at site with the stay ring. NDT shall be carried out on stay ring and spiral casing as per drawing requirements.

Three makeup pieces have been provided with erection allowance to be matched at site. Edge preparation in few sections may have to be done at site. The weld quality shall have to be ultrasonically/MPI tested as per drawing requirement.

The assembled stay ring & spiral casing shall be hydraulically tested at site to check for soundness of weld joints. The central test plug bolted type is in single piece and bolted to stay ring. The spiral test cone (16 thick) is supplied in single piece shall be welded at spiral inlet end for pressure testing. The spiral casing shall be kept pressurized during the process of concreting.

BF Valve assembly: BF Valve weighing 17.49 tonnes of sealing 2060 mm is dispatched in assemble condition to site. It is bolted to outlet pipe with dismantling joint on D/S and inlet pipe with taper piece on U/S. It has rubber sealing arrangement form maintenance of main seal on D/S side. Two hydraulic servomotors, one on each side of the valve shall be provided.

Inlet pipe with taper piece for BF valve: The inlet pipe of thickness 25 mm shall be in single piece weighing 3.78 tonnes and of tapered type from 2460 mm dia to 2210 mm dia. It shall be welded at site with penstock at large end and bolted/flanged to MIV at small end. The length of inlet pipe with taper piece is approx. 1900 mm and it has cutting allowance at one end which is to be cut to suit site assembly. Weld preparation at one end to be made as per drawing. Site joints shall be subjected to 100% ultrasonically & MPI tested as per drawing.

Outlet pipe with dismentelling joint for BF valve: The outlet pipe of thickness 16 mm shall be in single piece weighing approx. 4 tonnes and of inside dia of 2074mm. It shall be welded at site with spiral inlet and bolted/flanged to MIV. The length of outlet pipe is approx. 3480 mm and it has

cutting allowance at one end which is to be cut to suit site assembly. Weld preparation at one end to be made as per drawing. Site joints shall be subjected to 100% ultrasonically & MPI tested as per drawing.

Pit liners: The upper and lower pit liner together is approx. 4.1 tonnes in weight. Upper pit liner shall be supplied in two halves which is to be assembled and welded together at site. All site weld to be DP tested 100% at site. The plate of thickness of lower & upper pit liner is 6 mm. The inner diameter of lower pit liner is 3600 mm and of upper pit liner diameter is 2900 mm. The upper pit liner has pockets for installation of two nos. guide vane servomotors and lower pit liner has an opening of 3000 mm width for runner removal.

Embedded pipe lines in secondary stage foundation: for various functions for all 3 units have been provided. Necessary cutting in pit liner etc wherever required for the embedded pipelines, pickling etc shall have to be done at site. Pipes shall in general be supplied in straight lengths and to be bent at site as per requirement. For medium and large size pipes, regular bends may not be supplied and therefore bends shall have to be fabricated at site. The pipes are to be layed and welded at site as per drawing. All welds are to be 100% DP tested. All pipes are to be hydraulically tested at site after welding.

Guide apparatus: 20 guide vanes of feather height approx 460 mm are located at PCD of 2208 mm. Regulating ring is located inside the guide vane PCD. Top cover is in single piece. Weight of top cover is 3.163 tonnes. Pivot ring is in single piece weighing 2 tonnes approx. Two servomotors are mounted on base plates to be installed / leveled at site.

Runner & shaft assembly: The Francis type runner assembly with OD 2016 mm and height 1072 mm is in single piece weighing approximately 4.7tonnes. The runner cone is to assembled at the bottom of the runner.

The turbine shaft 3840 mm long is flanged type at both ends with guide bearing journal of diameter 850 mm. This is bolted to runner at turbine end with 12 nos. fitted bolt of dia 76 mm. Upper flange of turbine shaft is bolted with12 nos. fitted bolt of dia 76 mm to generator shaft bottom flange.

Turbine guide bearing: Self pumping lubrication pad (6 nos.) type guide bearing in 2 halves weighing 1.73 tonnes has been foreseen. 4 nos. Plug in coolers are mounted inside the guide bearing housing. Other essential instrumentation for temperature, level sensing etc have been provided. The joints are to be applied with loctite to be arranged by the erection contactor. The dowelling at bearing housing with top cover shall be done at site after centering of bearing housing.

Turbine shaft sealing: Rubber type sealing has been provided which is assembled on a bracket to be mounted on the top cover. Inflated type maintenance seal has also been provided. The rubber ring shall be sealing against the rotating sleeve to be fixed on the turbine shaft flange.

Other standard assembles: Various assembles like feedback system, top cover drain pumps, oil pumping system, oil air receives, oil leakage unit as

generally provided in any hydro unit are all foreseen which shall be erected at site.

Feedback mechanism: It comprises of a mechanism to transmit the guide apparatus movement signal to the hydro mechanical cabinet (HMC) of governor. This is achieved through a wire rope with necessary brackets and versatile rollers connected from regulating ring to master switch and in turn to HMC.

Installation of metering instruments: Pressure and temperature measuring instruments are installed on this metering panel to measure the pressures of different points like spiral casing, draft tube, sealing air & water pressures, servomotor closing & opening pressures etc. The pipelines shall be hydraulically tested to required pressures.

Monorail assy: Monorail assembly weighing 0.3 tonne has been provided in the turbine pit to handle various components of guide apparatus and guide bearing etc.

Platform in turbine pit: Chequered plate platform has been foreseen for easy movement in the pit. Plates are fixed over the angle frame for which matching holes are to be done at site.

Oil, water, air pipelines: Pipelines after erection shall be tested at required pressures as per drawing requirement. Pipes shall be cleaned, properly clamped, painted at site.

BRIEF DESCRIPTION OF GENERATOR

GENERAL:

The generator is of vertical shaft Semi Umbrella type construction with closed air circuit ventilation and suitable for coupling to a Francis turbine. Static excitation system is provided for energizing the field winding of rotor. This supply is fed through slip rings located above the generator rotor on a tubular shaft.

The generator combined thrust bearing and a guide bearing is positioned below the rotor and one guide bearing above the rotor. The bearings are of self-lubricating type and immersed in oil bath in which plug-in type oil coolers are provided. Thrust bearing is provided with high-pressure oil injection (HS Lubrication) system. Air operated brakes are mounted on lower bracket arms. These are also used for lifting the rotor for maintenance purposes. For trapping and subsequent evacuation of the brake dust generated during braking operation, brake dust collection equipment has also been provided.

Air coolers are directly mounted on the outer steel casing of stator. CO_2 type fire extinguishing system is provided. For monitoring the vibrations on the bearings of the machine, an on-line (continuous) monitoring system has been provided. Creep running of the machine is detected though a creep detector and shaft current monitor is also provided.

GENERAL DESCRIPTION OF VARIOUS ASSEMBLIES.

STATOR: The wound stator shall be dispatched to site in three segments. The total weight of wound stator shall be 47 tonnes. Total lifting weight of stator including lifting bracket is 58 tonnes. The stator frame A/F is 6730 mm and height is 2400 mm. Joint winding of stator has to be carried out at site. HV test is to be carried out on complete stator at site. The thrust collar is separate which is to be pressed / assembled at site.

MAIN GENERATOR SHAFT & THRUST COLLAR: The shaft is having integral thrust collar for thrust & guide bearing .

SPIDER: Rotor spider is a fabricated structure in single piece on which rotor rim building will be carried out at site. The weight of spider is approx. 9 tonnes.

ROTOR RIM: The rotor rim, which is assembled around rotor spider at site, is built up from sheet steel laminations. The laminations are pressed between steel end plates during assembly and clamped by means of tight fitted studs. The rim segments do not have equal weight due to variation in thickness. Therefore, all the laminations are required to be degreased, cleaned, de-burring if any, segregated in groups of equal thickness by weight measurement and accordingly assembled. The rim is secured tangentially to the rectangular bars of the spider with sets of 5 part keys having a master key, so as to allow the rim to float freely during operation. As such, no hot wedging shall be required to be carried out. Broaching of the rim shall have to be done at site as is usual in rim type rotors.

POLES WITH FIELD WINDINGS: There are 20 poles each having 2 no. ‘T’ shaped tails to engage with corresponding ‘T’ shaped slots in rotor rim. Damper connections have also been foreseen. The weight of each pole is 660 kg.

SLIP RINGS & BRUSH GEAR: The slip rings are mounted on the tubular shaft during erection. The brush-gear collector shall be mounted on tubular shaft which is mounted on upper bracket.

CARBON DUST COLLECTION SYSTEM: Necessary arrangement is provided to prevent mixing of carbon dust with closed air ventilation system of generator. A small centrifugal fan is provided on extension shaft under the slip rings assembly. The carbon dust is collected in the cleanable filters mounted on the brush gear casing.

BEARINGS:

THRUST BEARING: Thrust bearing is positioned below the rotor in bottom bracket. Thrust bearing is of spring mattress with segmental pad type consisting of a set of 12nos. babbitted segmental pads. The bearing is of self-lubricating type and immersed in oil bath in which plug-in type of oil coolers are provided.

GUIDE BEARINGS: One no. segmental pad type of guide bearings is provided for generator along with thrust bearing housed in lower bracket. Another guide bearing is housed in top bracket. The guide bearing is of pivoted pad type consisting of 12 nos. babbitted pads.

HYDROSTATIC LUBRICATION SYSTEM: A high-pressure oil system is provided for the thrust bearing in order to create a positive oil film over the pads at low speeds. The components consist of a positive displacement pump with its motor, filters, valves etc. mounted on a steel base.

VENTILATION: The generator has closed circuit system of ventilation. Air coolers are to be assembled to the outer periphery of the stator frame.

UPPER BRACKET: The upper bracket consists of a fabricated steel structure having a central part and 6 nos. radial arms. The arms are to be bolted to the central part at site. It supports the weights of the stationary parts of brush gear, generator covers, mechanical over speed device, creep detector, speed signaling generator (S.S.G) etc. Total weight is 9.5 tonnes.

LOWER BRACKET: The lower bracket is of fabricated steel structure. The guide bearing and thrust bearing is housed in it along with oil coolers. Brake-cum-jack units are also mounted on the bracket for rotor braking. The total weight is 11.5 tonnes.

BRACKING AND JACKING SYSTEM: has been provided for the braking of the unit during stopping and jacking whenever required.

Brake dust collection equipment: The brake dust collection equipment consists of two extraction units for each hydro generator, hoppers around brake assembly for trapping the brake dust and flexible hoses for connecting hoppers to extraction unit.

COOLING WATER SYSTEM: Cooling water pipe lines along with pressure gauge and flow monitoring instruments are provided to supply cooling water to air coolers and oil coolers.

MAJOR INSTRUMENTS & DEVICES:

- Mechanical over speed device.
- On line condition monitoring system for vibration.
- Creep detector system.
- Speed signaling generator

CO_2 TYPE FIRE EXTINGUSHING SYSTEM:

Carbon dioxide type fire extinguishing system has been provided. Smoke detectors is provided in all the generators with common control panel.

General:

- Special welding electrodes for main assemblies like draft tube, spiral casing, BF valve inlet pipe with taper piece and outlet pipe of BF valve etc. shall be provided by BHEL manufacturing units. Any additional requirements resulting

due to reasons namely but not limited to avoidable ,mis-handling, poor storage, high rate of rejections due to poor quality of welding or deployment of insufficiently experienced welders etc shall be arranged by contractor at his own cost. General purpose welding rods shall be arranged by contractor at his own cost.

- Insulating materials for stator winding shall be provided by BHEL.

- Operators for one no. EOT cranes 75/15 tonne to be provided by the contractor free of cost

- First filling of oil with 10% extra for turbine and generator bearings, OPU system, and transformers shall be supplied by BHEL. Any undue wastage of oil due to mis-handling, poor quality of piping and/or other works resulting into leakages or spillages shall have to be arranged by contractor at his cost or recoverable from him.

- In order to save time of assembly/erection of spiral casing, the welding shall be carried out by MIG process as far as possible. Two shifts or preferably three shifts working with deployment of sufficient number of certified welders, fitters etc shall be adopted to ensure completion of stay ring and spiral casing assembly in maximum of two months period.

- Since the subsequent units shall have to be erected/ commissioned with a gap of one month from the previous unit, the contractor shall have to complete the rotor assembly in around 1 months by working round the clock in this area. Moreover, three-shift working shall have to be adopted by the contractor to meet the erection schedule.

- In view of the tight erection schedule, limited area in service bay and rotor assembly being in critical path, whatever pre-erection preparatory works can be carried out in BHEL store area shall have to be planned accordingly. In particular, the cleaning, de-burring, de-greasing and segregation of rim punching by weight shall definitely be planned and carried out in store area.

NDT:

Stay ring, Spiral, BF valve inlet pipe with taper piece and outlet pipe - 100% Ultrasonically and MPI tested for stay ring spiral joints, circumferential, longitudinal & Tee joints and as per drawing. All other butt welds shall be as per drawing requirements.

ANNEXURE - C

GENERAL SCOPE OF WORK

A. SCOPE OF WORK

1. The Scope for construction of BHEL Closed store and open yard at SALMA HEP covers all works for development of structural steel shed (with CGI sheet roofing) for BHEL Store complex at site. This includes

- Earth work including excavation, filling, compaction, leveling and grading
- Plain & Reinforced cement concrete and RR Masonry.
- Structural & reinforcement steel work, CGI sheet roofing/side cladding & partition work
- Scaffolding & Formwork
- Finishing work including plastering, flooring, false ceiling, painting etc.
- Water supply and Sanitary work.
- Electrification of Building by providing Incoming cable, Main Distribution Board, Wiring for all installation Light fixtures, power sockets, Exhaust fans, Energy meter Etc
- Drainage(open and covered)
- MS gates for Entrance/Exit
- Road work

The scope includes supply of all materials labour, consumables, tools & plants, transportation, storage, sample testing, etc., and any other materials to complete the work.

2. The scope of work will also include such other related works although they may not be specifically mentioned in the above paragraph and all such incidental items not specified but reasonably implied and necessary for completion of the job as a whole all as desired and as directed by the engineer. The detail scope of work covered above is not a comprehensive list of items of work involved. The detail scope of work may vary considerably depending on the actual construction requirements.

3. Unless otherwise specified, the work to be provided by the contractor for the items mentioned in the "Bill of Quantities", shall include but not be limited to the following:

a) Furnishing all labour, materials, supervision, construction plans, equipment supplies, transport, to and from the site, fuel, electricity, compressed air, water, transit and storage insurance and all other incidental items and temporary works not shown on specified but reasonably implied or necessary for the proper completion, maintenance and handling over the works, except in accordance with the stipulations laid down in the contract documents and additional stipulations as may be provided by the engineer during the course of works

b) Furnishing samples of all materials required by the engineers for testing / inspection and approval for use in the works. The samples may be retained by the engineer for final incorporation in the works.

c) Furnishing test reports for the products used or intended to be used, if called for the specifications or if so desired by the engineer.

d) Giving all notices, paying all fees, taxes etc. in accordance with the general conditions of contract, that are required for all works including temporary works.

e) Arranging manufacturer's supervision for items of work done as per manufacturer's specifications when so specified.

f) Providing all incidental items not shown or specified but reasonably implied or necessary for the successful completion of the work in accordance with contract.

4. The contractor shall be fully responsible for the proper and accuracy layout, alignment, orientation of all elements of the construction work which shall be carried out by him accurately in accordance with

drawings and obtaining clarifications from BHEL/Architects if required by him, including for any discrepancy if any, before the work is executed by him. The setting out and the construction work shall be carried out by suitable precision instruments and checked from time to time and got approved. The contractor shall provide all equipment and instruments as required at the site at his own cost.

5. BHEL-Power Sector (NR) is ISO 9001-2000, ISO 14001-1996 and OHSAS 18001-1999 certified company. Quality of work, to customer's satisfaction and system requirements is the essence of these certifications. The contractor in all respects will organize his work, systems, environment, process control documentation, tools, plant, inspection, measuring and testing equipments etc. as per instructions of BHEL engineer.

The contractor shall also comply with applicable legislation and regulations with regards to Health, Safety and environmental aspects for minimizing risk arising from occupational health, safety hazards, controlling pollution and wastage

B. CLOSED STORE SHED

The store shed shall be developed on land given by BHEL having the built up area of Approx. 480 Sqm .

Closed Shed (40x12 mtr) - 1 no.

The Store area shall be cleared of all vegetation, scrap and debris.The stores shall be made of I Beam columns, tubular truss, purlins, side ties, bottom ties, wind ties of minimum 25mm x 5mm over the roof sheets along the purlins, as specified(drawings attached for reference).**The working/shop drgs for Steel structures, trusses, etc shall be got approved before start of work.**

The columns are erected with holding down foundation bolts in the RCC 1:1.5:3 (using 20 mm size coarse aggregate) foundation of pedestal size 1500mm high 500x400 mm minimum and raft size 1500x1500x300 mm. The raft is to be provided with a reinforcement of 10mm bars @ 125mm C/C both ways and the pedestal is to be provided with 4 no.16mm & 8 no. 12 mm bar vertically with a minimum 'L' of 200mm and with 8mm stirrups @ 150 C/C. The foundation is to rest over 100 mm PCC on firm rock / ground as instructed / approved by Engineer-in-charge. 0.80 MM Corrugated (or .63 mm thick if approved by Engineer I/C) GI sheets shall be provided with polymer coated J or L hooks, 8mm nut bolts for roofing and side cladding with appropriate anchoring, fixing and drainage arrangements. Approved quality Enamel paint shall be used for painting work to MS Structure. Below the Finished floor level Random rubble masonry of 30 cm width course, to a depth of 700 mm minimum, in cement mortar 1:6 is to be laid which shall rest on top of 300 x 300 mm plinth beam (6- 16 mm dia bars and stirrups 8 mm @ 200 mm c/c). The base course under plinth beam shall be PCC 100 mm thick and 400 mm wide. The top of the plinth beam shall be 300 mm below the existing ground level. The finished floor level of the stores shall be atleast 400 mm above existing ground level.The Store flooring consists of raising the Ground level by filling locally available good earth and 100 mm PCC over which approved CC flooring is to be laid as specified. The extended outside portion is of 750 mm wide plinth protection as specified. Extended roofing shall also be provided as per the instructions of the Engr. I/C. MS Sheet 0.63 mm hinged shutters (5.0x 5.0 mtrs) with MSA bracings (shop drawing to be approved by BHEL and to be prepared by the contractor) complete with all bolts, anchors, etc. Outside plastered area shall be provided with cement based paint of approved shade, colour and make. Contractor to note no fixtures, specials or any material will be given for any work which is required

for the completion of works. Average 300 mm deep and 300 mm wide drains shall be constructed along the plinth protection as per directions of the Engr I/C.

Store Office area shall be tentatively of 5.0 x 3.5 m size with 200 mm thick and 2.5 mtr high RR masonry with Decorative blockboard doors and MS windows as per relevant Standard/Code, plastered with CM 1:5, 12mm thick minimum both side, finished with 2 coats of distemper over a primer coat as instructed by Engineer in charge.

The steel door and windows are to be painted with two coats of approved synthetic enamel paint over a red oxide primer coat. There will be steel windows of size 1.20m x 1.20m. Windows and doors will have RCC 1:2:4 lintel of 150mm thick.

It is proposed to electrify the closed shed as follows:

4 Nos HPSV flood light fittings with lamps of 250 W with Choke & accessories etc.each to be provided on top of store shed with 2 mtrs. height rigid GI pole provided with adequate brackets for mounting the flood lights and tie rods duly grouted or welded to permanent structure. Two lights should be provided with independent MCB switch.

The connection to all HPSV fittings is to be provided by 2.5 Sq. mm PVC insulated copper conductor in PVC conduit for fittings mounted on store shed.

Providing 15/5Amps Single phase socket and 20Ampts – 3 phase socket as per instructions.
Providing pedestal fan & air circulator & heavy duty exhaust fan as per instructions.

Providing common main panel to cater requirement of all total layout, laying incoming cable for the above panel from the outside nearest source, providing feeder panel, lights & sockets requirement etc., laying interconnecting panel between common main panel and feeder main panel, providing MCB distribution board to cater lights, sockets & fans requirement.

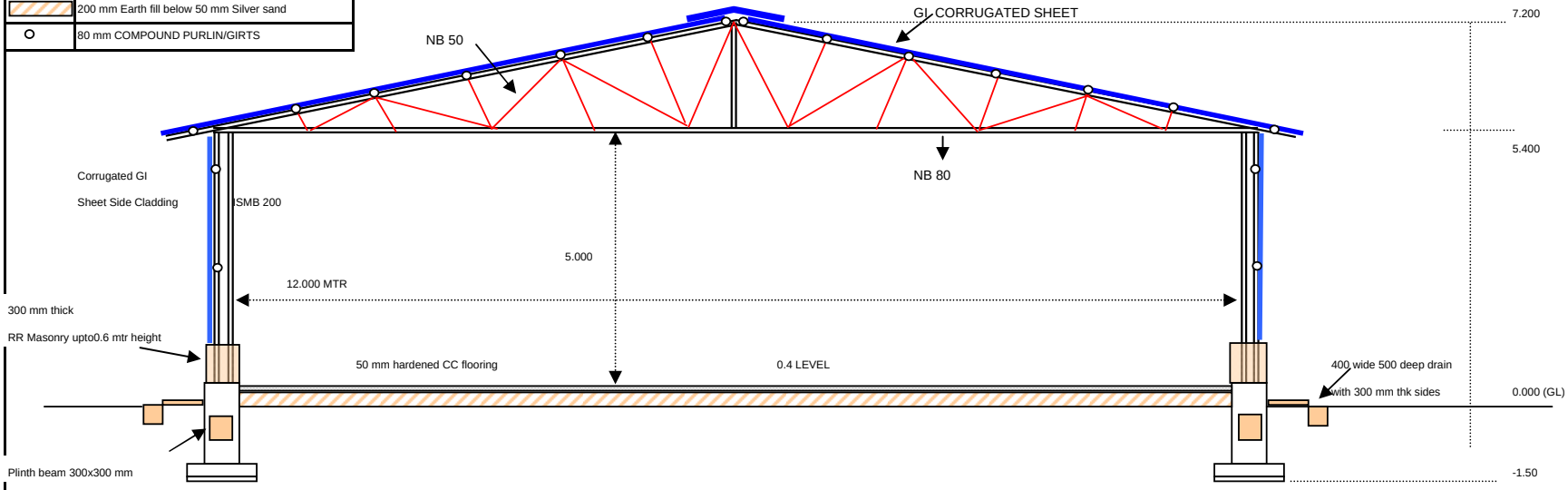
Providing earth electrode and earth conductors as per requirement.

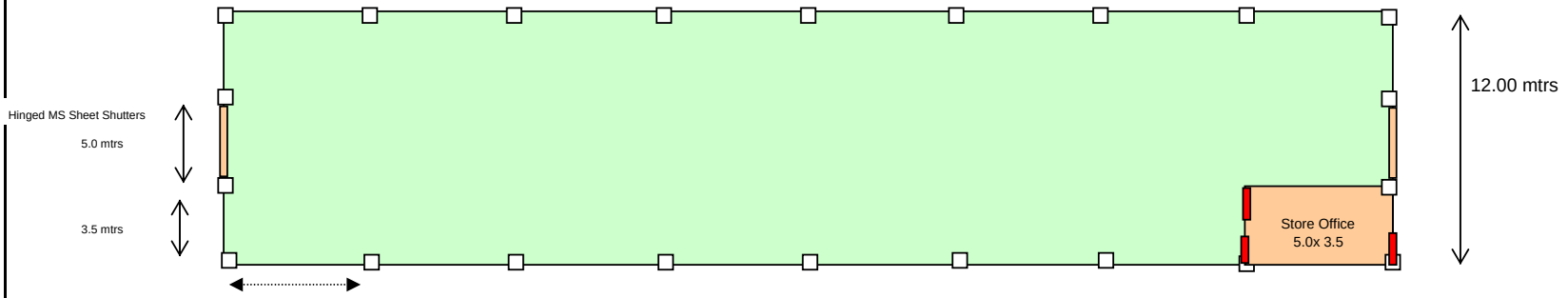
The scope of work has to be completed in all the manner to meet the functional requirement by covering all the left out allied work in BOQ thereby to commission the system as a whole.

Complete Electrification alongwith necessary lighting-fixtures, fans, necessary cables, MCB, ELCB, Main switch, Energy meter, Junction box, switches, switch boards, Plug points etc. are in the contractor's scope so that installation is fully safe & meets local authorities statutory requirement. The necessary covers required for the MCB, energymeter etc., are to be provided by the contractor.

All the material used to be approved by Engineer-in-charge and in case of non-availability of approved make of material, BHEL Engineer-in-charge is authorized to substitute the same.

LEGEND	
	150 mm PCC in panels 4.0x5.0 mtrs
	200 mm Earth fill below 50 mm Silver sand
	80 mm COMPOUND PURLIN/GIRTS

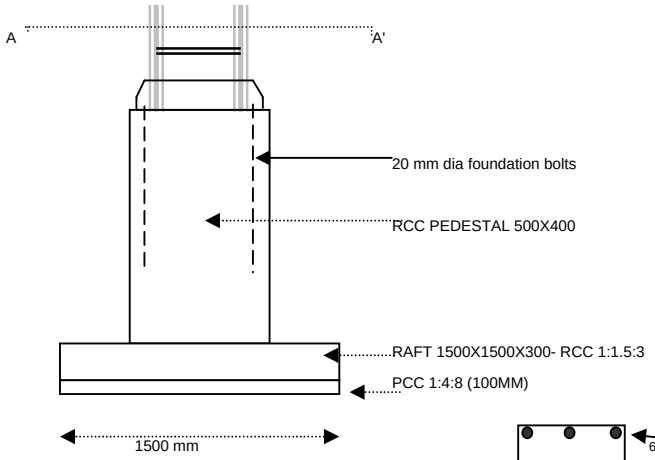




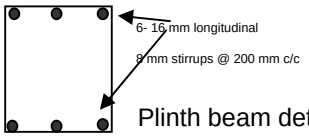
40 M (8 NO.@5.0 M C/C)

Power Sector - Northern Region
Bharat Heavy Electricals Ltd.

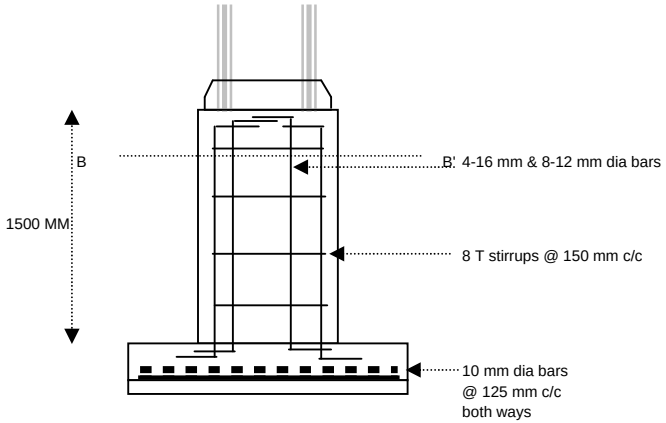
PROJECT:			TITLE: GA DRG FOR STORE		REV	DATE
ENABLING WORKS AT SALMA			Made by	KSB	OO	02.03.2009
DRG. NO.:SALMA/SITE/002	Rev	oo	Checked by			
			Approved by			



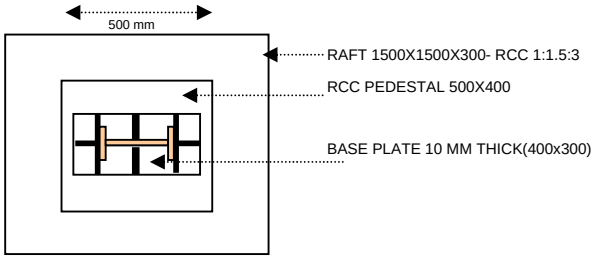
COLUMN FOOTING/PEDESTAL



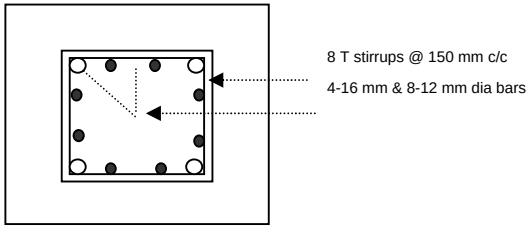
Plinth beam details



REINFORCEMENT DETAILS



SECTION A-A'



SECTION B-B'

Power Sector - Northern Region
Bharat Heavy Electricals Ltd.

PROJECT:			TITLE: RCC WORK DETAILS		REV	DATE
ENABLING WORKS AT SALMA			Made by	KSB	OO	02.03.2009
DRG. NO.: SALMA/SITE/004	Rev	oo	Checked by			
			Approved by			

SALMADAM AFGANISTAN 3X14MW HEP

GENERAL IDEA OF WEIGHTS TO BE HANDLED

ANNEXURE I PART 1

The information given below is tentative. Only a few of the typical components are listed below to give a general idea to the bidder.

The weights and sizes indicated below are only approximate and are liable to vary in this contract
Approximate total weight of materials to be handled break-up is given below

Sl. No.	System	Equipment/component I	Package Weight, Kg	Package Length, MM	Package Weight, MM	Package Height, MM	No. of Cases Per Unit	Total Cases for the Project	TOTAL WEIGHT (KG)
	GENERATOR								
1		Wound Stator Sector	19000	6200	2100	2600	3	9	171000
2		Poles	700	1100	900	600	20	60	42000
3		Rim Punching	2500	1600	700	850	12	36	90000
4		Shaft	11000	5500	1400	1600	1	3	33000
5		Spider	10000	3400	3400	1200	1	3	30000
6		Top Bracket Housing	5000	2800	2800	600	1	3	15000
7		Top Bracket Arm	800	2000	400	600	6	18	14400
8		Bottom Bracket Housing	16000	2800	2800	1800	1	3	48000
9		Air Coolers	400	1900	700	500	6	18	7200
10		Plug in Type Oil Coolers for Lower Bearing	600	1200	700	900	4	12	7200
11		Plug in Type Oil Coolers for Upper Bearing	200	700	700	500	2	6	1200
12		Generator Large Misc Packages	1000	3000	1500	1200	8	24	24000
13		Generator Medium Misc Packages	750	2000	1000	1000	14	42	31500
14		Generator Small Misc Packages	500	1200	800	800	20	60	30000
	TURBINE								
1		DTCONE	3500	2.5	2.5	1.5	1	3	10500
			1000	2.6	2	0.5	1	3	3000
			1000	1.5	1.5	1	1	3	3000
2		DT LINER	3000	3.4	3	3	1	3	9000
			3000	3.6	2.1	6	1	3	9000
			1500	2.6	1.5	1.5	1	3	4500
3		PIER NOSE LINING	1000	2.5	1.8	1.6	1	3	3000
4		STAY RING	7000	4	3.2	1.5	1	3	21000
			2000	3	1.5	1.5	1	3	6000
5		SPIRAL CASING	3000	3.8	2	2	1	3	9000
		(In about nine segments,	3000	4.5	2	2	1	3	9000
		maximum plate	3000	4.7	2.5	2.1	1	3	9000
		thickness less than 25 mm)	3000	2	2	1	2	6	18000
6		PIT LINER	1500	3	2.2	2	1	3	4500
			1500	3	1.6	2	1	3	4500
			1000	1	0.5	0.6	1	3	3000
7		GUIDE Bearing	3000	2	2	1.5	1	3	9000
			1000	1	1	0.8	1	3	3000
			1000	1.5	1.5	0.5	1	3	3000
8		Shaft Sealing	1500	2	2	1.5	1	3	4500
			1000	1	1	0.5	1	3	3000
9		Runner	5000	2.5	2.5	1.5	1	3	15000
									0
10		Shaft	6000	4	1	1	1	3	18000
11		Guide Apparatus	3500	3	3	1	1	3	10500
			1000	2.7	2.7	0.5	1	3	3000
			1000	2	2	0.8	1	3	3000
			1500	1.5	1	1	4	12	18000
12		B.F.Valve	15000	3.5	2.7	1.2	1	3	45000
			2000	2	1	0.5	1	3	6000
			2000	1	1	1	1	3	6000

			2000	1	0.8	0.8	1	3	6000
13		G.V.Servo motor	1000	0.8	0.8	1	2	6	6000
			1000	0.5	0.5	1	2	6	6000
14		BFV. Servo motor	2000	1.2	1.2	2	1	3	6000
15		Large Misc Packages	2000	2	2	2	15	45	90000
16		Medium Misc Packages	1500	2	1	1	15	45	67500
17		Small Misc Packages	500	1.5	1	1	25	75	37500
	GOVERNING & OIL SYSTEM								
1		Hydro Mechanical Cabinet	1700	1500	1600	3000	1	3	5100
2		Electro Hydraulic Governor Controller (EHGC)	900	1200	1200	2520	1	3	2700
3		Tooth Wheel & Magnetic pick-up screen cable	50	750	750	300	1	3	150
4		Maintenance tool for software Modification & Development	10	750	750	300	1	1	10
5		Hydraulic Control panel for MIV	650	850	1000	2350	1	3	1950
6		Oil Pressure Receiver	2300	Ø 1250	Ø 1250	3000	1	3	6900
7		Oil Sump Tank	2900	1600	2100	1300	1	3	8700
	OIL HANDLING & PURIFICATION SYSTEM								
1		Insulating oil filtration system	2500	1500	3000	2000	1	1	2500
2		Lubricating oil filtration system	2500	1500	3000	2000	1	1	2500
3		Dirty oil tank	1700	2000	3500	2500	2	2	3400
4		Clean oil tank	1700	2000	3500	2500	2	2	3400
5		Oil transfer pump	50	500	1000	750	2	2	100
6		Piping & fittings	500	800	3500	1200	1	2	1000
7		Spares	400	800	800	2000	1	2	800
8		First filling of Oil drum	200	Ø 600	Ø 600	900	12	36	7200
	INSTRUMENTS & SPARES FOR OIL SYSTEM								
1		Level controller, Moisture detector	60	800	800	1200	1	1	60
2		Dial Type Thermometer	30	800	800	1200	1	1	30
3		Pressure Transmitter	45	800	800	1200	1	1	45
4		Turbine discharge measuring equipment	60	800	800	1200	1	1	60
5		RTD, Recorder, Thermal relay, Pressure gauge, Limit switch, float switches. EHT tester	65	800	800	1200	1	1	65
6		Mandatory spares Governor EHT	50	800	800	1200	1	1	50
7		Mandatory spares Governor Pump	50	800	1400	1200	1	1	50
8		Mandatory spares Governor MDV	50	800	800	1200	1	1	50
9		Mandatory spares Governor Idler valve & safety valve	50	800	800	1200	1	1	50
10		Recommended spares HMC	10	800	800	1200	1	1	10
11		Recommended spares HMC	10	800	800	1200	1	1	10
12		Mandatory spares MISC	30	800	800	1200	1	1	30
13		HR/TR water level measuring equipment Sensor	10	800	800	1200	1	1	10
14		HR/TR water level measuring equipment	40	800	3500	1200	1	1	40

15		Hydraulic over speed device and turbine junction box	30	800	800	1200	1	1	30
16		Electro magnetic flow meter	24	800	800	1200	1	1	24
	SWITCHYARD EQUIPMENT								
1		Control Cubicle	30	0.70	0.50	0.50	6	6	180
2		123kV Circuit Breaker	1,600	3.30	1.80	0.80	5	5	8000
3			300	1.20	1.10	0.10	5	5	1500
4			250	4.10	0.60	0.40	5	5	1250
5			225	2.40	0.60	0.50	5	5	1125
6		SF6 Gas	87	1.40	0.40	0.40	5	5	435
7		123kV CT	800	3.00	1.00	1.00	15	15	12000
8		123kV CVT	1,000	2.50	1.00	1.00	3	3	3000
9		123kV BPT	1,000	2.50	1.00	1.00	3	3	3000
10		123kV Isolator	200	5.00	0.50	0.50	7	7	1400
11			70	1.50	0.50	0.50	42	42	2940
12			200	1.50	0.50	0.50	21	21	4200
13			150	1.00	1.00	0.50	14	14	2100
14		96kV LA	100	0.60	0.60	2.00	15	15	1500
15		132kV Line Trap	300	1.50	1.50	1.80	3	3	900
16		Disc Insulator	200	2.00	0.50	0.50	54	54	10800
17		Support Post Insulators	150	1.00	0.50	0.50	63	63	9450
18		Conductor Drum	3,000	Dia: 2 M			5	5	15000
19		Overhead Shield Wire	1,000	Dia : 1 M			3	3	3000
20		Power & Control Cables	2,000	1.50	1.50	2.80	10	10	20000
21		Cable Glands							100
22		Control & Protection Panels	1,500	3.00	1.50	2.80	1	1	1500
23		Earthmat rod							1000
24		Earthing Strips	3,000	8.00	2.00	3.00	1	1	3000
25		Pipe Electrode							1000
26		GI Pipe alongwith sockets & bends							1000
27		Cable Trench Material							0
28		CLAMPS	1,000	2.00	1.00	2.00	1	1	1000
29		PLCC Equipment	1500	3	1.5	2.8	1	1	1500
30		SCADA	1500	3	1.5	2.8	1	1	1500
31		Bay Marshalling Kiosk	150	1.00	1.00	0.50	5	5	750
32		CT/ CVT Junction Box	150	1.00	1.00	0.50	7	7	1050
33		Civil Steel Structures & Hardware							
34		Mandatory Spares							
	GENERATOR RELAY PANELS & 110 KV RELAY PANELS								
1		Panels	1200	2200	1200	2600	9	9	10800
2		Panels	1100	2200	1000	2600	2	2	2200
3		Panels	450	950	1000	2600	3	3	1350
4		Panels	550	1200	1000	2450	1	1	550
5		Panels	150	1220	500	500	7	7	1050
	BOP ELECTRICAL								
1	**415V AC System**								
	1.1	UAB	3700	5500	1000	2450	1	3	11100
	1.2	LTB-1	1200	4000	1000	2450	1	1	1200
	1.3	LTB-2	1000	3600	1000	2450	1	1	1000
	1.4	SSB-1	3700	5500	1000	2450	1	1	3700
	1.5	SSB-2	3700	5500	1000	2450	1	1	3700
	1.6	SSB-3	1100	2700	1000	2450	1	1	1100

	1.7	SSB-4	1100	2700	1000	2450	1	1	1100
	1.8	SSB-5	3200	4500	1000	2450	1	1	3200
	1.9	SSB-6	3200	4000	1000	2450	1	1	3200
	1.1	Spares	500	2000	2000	2000	1	1	500
2	**220V DC System**								
	2.1	Battery	6000	3500	600	2000	1	1	6000
	2.2	Battery Charger	1200	1250	850	2000	1	1	1200
	2.3	DCDB	1200	3000	400	2000	1	1	1200
	2.4	Spares	500	2000	2000	2000	1	1	500
3	**Aux. Pump Motor Starter Panels**								
	3.1	H.S. Lub. Pump Motor Control Panel	400	1100	400	1100	1	3	1200
	3.2	Brake Dust Collector Motor Control Panel	200	700	400	700	1	3	600
	3.3	Stator Heaters Control Panel	400	1100	400	1100	1	3	1200
	3.4	Gov. Oil Pumps Motor Control Panel	600	1100	400	1100	1	3	1800
	3.5	MIV Oil Pumps Motor Control Panel	600	1100	400	1100	1	3	1800
	3.6	Oil Leakage Motor Control Panel	200	700	400	700	1	3	600
	3.7	Top Cover Drainage Motor Control Panel	200	700	400	700	1	3	600
	3.8	C.W. System Control Panel	1000	4000	800	2300	1	1	1000
	3.9	H.P. Air Compressor Motor Control Panel	600	1100	400	1100	1	1	600
	3.10	L.P. Air Compressor Motor Control Panel	600	1100	400	1100	1	1	600
									500
3	**Starter Panels for**								
	3.11	Dewatering Pump Motor Control Panel	600	1100	400	1100	1	1	600
	3.12	Drainage Pump Motor Control Panel	600	1100	400	1100	1	1	600
	3.13	Emr. Drainage Pump Motor Control Panel	600	1100	400	1100	1	1	600
	3.14	Spares	600	2000	2000	2000	1	1	600
									0
4	**DG Sets**								0
	4.1	DG Sets	13000	8000	3000	3200	2	2	26000
	4.2	Control Panel	1000	3000	1000	2300	1	1	1000
	4.3	Storage Tank	200	3500	2500	1500	1	1	200
	4.4	Pipes & Fittings	1000	6000	2000	2000	1	1	1000
	4.5	Loose Oil	200						200
	4.6	Spares	500						500
									0
5	**Aux. Transformers**								
	5.1	Station Service Transformer	15000	7500	5000	5500	1	1	15000
	5.2	Marshalling Box	500	1500	400	1500	1	1	500
	5.3	Station Aux. Transformer	4000	2200	2100	2600	2	2	8000
									0
6	**Cables, Cable Trays & Accessories**								0
	6.1	H.T. Power Cables (1 drum)	6000					1 lot	6000
	6.2	L.T. Power Cables	30000					1 lot	30000
	6.3	Control Cables						1 lot	
	6.3.1	Type-1 (4 drums)	1700						1700
	6.3.2	Type-2 (8 drums)	4000						4000
	6.3.3	Type-3 (8 drums)	6000						6000
	6.3.4	Type-4 (7 drums)	10000						10000
	6.4	**Instrumentation Cables**						1 lot	
	6.4.1	Type-1 (4 drums)	2000						2000
	6.4.2	Type-2 (8 drums)	2500						2500
	6.4.3	Type-3 (6 drums)	3600						3600

	6.4.4	Type-4 (4 drums)	5000						5000
	6.4.5	Type-5 (5 drums)	5000						5000
	6.4.6	Type-6 (3 drums)	1000						1000
	6.5	Cable Accessories	1000					1 lot	1000
	6.6	Cable Trays	50000					1 lot	50000
7	**Illumination System**								
	7.1	Luminaries & Accessories	15000	6000	2000	2000	1	1	15000
	7.2	Street Lighting Poles	4000	11000	2000	2000	1	1	4000
	7.3	Panels	2000	600	300	600	4	4	2000
8	**Fire Fighting & Fire Detection System**								
	8.1	Panels	800	1200	800	2200	1	1	800
	8.2	Hydrant Service Systems & other equipments	5000	6000	2000	2000	1	1	5000
	8.3	Pipes	8000	6000	2000	2000	1	1	8000
	8.4	Panels	800	1200	800	2200	1	1	800
	8.5	Hydrant Service Systems & other equipments	5000	6000	2000	2000	1	1	5000
	8.6	Pipes	8000	6000	2000	2000	1	1	8000
	8.7	Panels	800	1200	800	2200	1	1	800
9	**Public Address System**								
	9.1	Control Panels	800	1200	800	2200	1	1	800
	9.2	Hand Sets, Loudspeakers & accessories	1000	4000	2000	2000	1	1	1000
10	**Switchgear**								
	10.1	Panels	2500	2750	2650	4155		2	5000
	10.2	Panels	2500	1450	2650	4155		1	2500
11	**Electrical Lab. Eqpt.**								
	11.1	Instruments	4000						4000
	BOP MECHANICAL								
12		**EOT Crane 1 x 75/ 15T**							
	12.1	Crane Component	650	2000	2100	1000	10	10	6500
	12.2	Crane Component	400						4000
	12.2	Crane Component	250	2000	1000	600	15	15	3750
	12.2	Crane Component	200	1500	1200	600	20	20	4000
	12.2	Crane Component	150	1000	1200	600	20	20	3000
	12.2	Loose Items	60000						
13		**Ventilation System**							
	13.1	Component of Ventilation	650	3000	1000	500	10	10	6500
	13.2	Component of Ventilation	550	1500	1200	800	12	12	6600
	13.3	Component of Ventilation	200	1200	800	600	15	15	3000
14		**Elevator**							
	14.1	Elevator component	650	3000	2500	500	12	12	7800
	14.2	Elevator component	250	2000	1200	600	10	10	2500
	14.3	Elevator component	200	1200	800	600	9	9	1800
15		**Mechanical Workshop Equipments**							
	15.1	Mech. W/S Component	500	3000	1500	1000	6	6	3000
	15.2	Mech. W/S Component	300	2000	1200	1000	15	15	4500
	15.3	Mech. W/S Component	250	1500	1200	1000	12	12	3000
									1569104
16	**GEN.TRANSFORMER**								
		TRANSFORMER	50000	4500	3500	3500	1	3	150000
								PART II	12840
								PART III	22600
									1754544
								SPARES/MISC ITEMS	87727.2
									1842271.2
								SAY	**1900**

Table of Panels and tentative dimensions ANNEXURE I PART II

W.B.S. Element no.: CE/0352-SH1-52-01
CE/0352-SH2-52-01
CE/0352-SH3-52-01
CE/0352-PR1-52-01
CE/0352-PR2-52-01
CE/0352-PR3-52-01

Project : Salma Dam H.E.P 3 x 14MW
Equipment : Controls & supervision systems

Reference	Description	Qty.	Total weight in Kgs	Shipping section	Panel dimensions in mm			Dimensions of packed shipping section in mm		
					Width	Depth	Height	Width	Depth	Height
ASE	Auto sequencer Eqpt.	3	2500	1	3053	800	2415	3053+75+75= **3203**	800+75+75= **950**	2415+150+75 **=2635**
TMP	Temp. Measurement panel	3	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
GP	Gauge panel	3	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
TGIP	Turbine Generator Instrument Panel	3	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
UAP	Unit Alarm Panel	3	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**

CCP	Common control	1	1500	1	2302	800	2415	2302+75+75 **=2452**	800+75+75= **950**	2415+150+75 **=2635**
SCP	Switch Yard Control Panel	1	2000	1	3053	800	2415	3053+75+75 **=3203**	800+75+75= **950**	2415+150+75 **=2635**
MMP	Mosaic Mimic Panel	3	1500 Each	3	2277 2252 2277	800 800 800	2415 2415 2415	2277+75+75 **=2427** 2252+75+75 **=2402** 2277+75+75 **=2427**	800+75+75= **950** 800+75+75= **950** 800+75+75= **950**	2415+150+75 **=2635** 2415+150+75 **=2635** 2415+150+75 **=2635**
DIP	Dam Interface Panel	1	1500	1	2302	800	2415	2302+75+75 **=2452**	800+75+75= **950**	2415+150+75 **=2635**
SAP	Switch Yard Alarm Panel	1	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
CAP	Common Alarm Panel	1	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
UPS	UPS	1	2500	1	3053	800	2415	3053+75+75= **3203**	800+75+75= **950**	2415+150+75 **=2635**
HMI	HMI	1	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
LOOSE ITEMS-1	LOOSE ITEMS	1	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**
LOOSE ITEMS-2	LOOSE ITEMS	1	900	1	1000	800	2415	1000+75+75= **1150**	800+75+75= **950**	2415+150+75 **=2635**

Table of panels and tentative dimensions **ANNEXURE I PART III**

W.B.S. Element no.: CE/0352-SH1-48-01
CE/0352-SH2-48-01
CE/0352-SH3-48-01

Project : Salma Dam H.E.P 3 x 14MW
Equipment : Static Excitation equipment with dynamic braking

Reference	Description	Qty.	Total weight in Kgs	Shipping section	Panel dimensions in mm			Dimensions of packed shipping section in mm		
					Width	Depth	Height	Width	Depth	Height
REG	Regulation cubicle	1	1000	1	1200	1250	2295	1200+150+50 **=1400**	1250+100+100= **1450**	2295+175+250 **=2720**
FS	Field Suppression	1	4400	1	3243	1250	2295 Refer note 1)	3243+150+50 =3443	1250+100+100= **1450**	2295+175+250 =2720
TY	Thyristor cubicle	3								
AUX. TR	Aux. Transformer cubicle for dynamic braking	1	1500	1	1500	1250	2295	1500+150+50 **=1700**	1250+100+100= **1450**	2295+175+250 **=2720**
IS	Isolator cubicle	1	2000	1	2750	1500	2000	2750+150+50 **=2950**	1500+100+100= **1700**	2000+175+250 **=2425**
TR	Transformer cubicle	1	1200	1	2550	1500	2450 Refer Note 2)	2550+150+50 **=2750**	1500+100+100= **1700**	2450+175+250 **= 2875**

T1	Excitation Transformer	1	1800	1	1400	670	1900	1400+250 **=1650**	670+630=1300	1900+250 = 2150
Others	Loose items & Accessories a] cooling Fans	4	110 each					870	870	600
	B] loose items	3	100 each					870	870	600
	C]Cables	2						Cable drums		

Note :

1) 2295 mm is cubicle height. Above each of the three thyristor cubicles there is a cooling fan and its height is 245mm.
2) 2300mm is cubicle height. 150mm is the height of duct and flange together on top of the cubicle. (Total height = 2400 = 2300 + 150)
3) **In addition** to the different shipping sections of panels, there will be **about 8 boxes** which will contain loose dispatch items, like thyristor cooling fans, module packing box, foundation bolts, special cables with connectors pre-fabricated at both ends etc. The packed size of each of these boxes is **width x depth x height = 870 x 870 x 600 mm.**
4) **Depending** on the Scope of supply for **cables** required for Static Excitation Equipment the **no. of boxes** can increase.

ANNEXURE I PART III

SALMA HEP (3x 14) MW
FURTHER DETAILS OF TURBINE & GENERATOR

TURBINE:

I DRAFT TUBE

1.	Draft Tube Knee Liner plate thickness	:	8mm
2.	No. of segments	:	02
3.	Draft tube knee lining flange dia (OD/ID)	:	2720/2280mm
4.	Out let dimensions – width-6160mm, height	:	1316.5mm
5.	Weight	:	7 Tons

II DRAFT TUBE CONE

1.	No of cones	:	01
2.	Dia of cone upper flange	:	2315mm
3.	Dia of cone lower flange	:	2720mm
4.	Height of cone	:	1496mm
5.	No of parts of each cone supplied	:	01

III STAY RING & SPIRAL CASING

1.	No of stay ring parts	:	01
2.	No of segments of spiral casing	:	09
3.	Weight of stay ring	:	05 Tons
4.	Weight of spiral casing	:	12 Tons
5.	Inlet dia of spiral casing	:	2074mm
6.	Spiral casing thickness	:	16 to 20mm
7.	No of joints to be welded at site	:	09
8.	Outer dia of stay ring	:	3132.4mm
9.	Throat height	:	461.3mm
10.	No of stay vanes	:	20

IV TURBINE PIT LINER

1.	Upper Pit Liner supplied in two halves- ID-2900mm	:	To be
2.	Weight of upper and lower pit liner together	:	4.2 Tons
3.	Thickness of plate	:	06mm
4.	Lower pit liner ID	:	3600mm

V FOUNDATION RING ASSEMBLY

1.	Weight	:	1.5 Tons

	2.	Height	:	566mm

VI GUIDE APPARATUS

	1.	No of Guide vanes	:	20
	2.	Feather height	:	459mm
	3.	PCD of guide vanes	:	2208mm
	4.	Regulating ring located Inside of guide vanes		

VII RUNNER & SHAFT ASSEMBLY

	1.	Runner OD	:	2040mm
	2.	Height	:	1072mm
	3.	weight	:	5.2 Tons
	4.	Shaft length	:	3840mm
	5.	Flanged at both ends		

VIII TURBINE GUIDE BEARING

	1.	Pad Type		
	2.	No of segments of guide bearing housing	:	02
	3.	Weight	:	5.5 Tons

GENERATOR

I STATOR

	1.	Type of machine	:	Semi Umbrella
	2.	Total weight of wound stator	:	47 Tons
	3.	No of segments of stator	:	03
	4.	Bars to be layed at site	:	Jointing segments
	5.	No of slots	:	192
	6.	Stator Bore	:	4500mm

II **ROTOR**

	1.	Rotor Total weight	:	69 Tons
	2.	No. of Poles	:	20
	3.	Pole Height	:	670mm
	4.	Rim height	:	950mm
	5.	Generator shaft length	:	4868mm
	6.	Generator shaft one piece weight	:	9 Tons
	7.	Spider to be assembled at site		

Annexure- II

List of T&P to be provided by BHEL on sharing basis

Sl No	Name and capacity	Qty	Remarks

NIL

Annexure-III

TENTATIVE LIST OF TOOLS & PLANTS FOR MATERIAL HANDLING (TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST)

S.NO.	ITEM	QTY.(Nos.)
1	Mobile crane 20T/ 40T	1 no
2	DG SETS (Suitable Capacity)	MINIMUM 1 NO
3	Trailor 30 T	1 (as & when required)
4	Truck 8/ 10T	1 no
5	Slings (10, 16, 25, 32, 40, 50 mm)	As per requirement
6	Pulling & Lifting machines 5T 2 no	
7	Chain Pulley blocks(2T, 5T, 10T)	1 each
8	D-Shackles & Eye Bolt	Assorted upto 20T
9	Hydraulic Jacks (10, 20, 50 Tons)	2 each
10	Wire Ropes	As per requirement
11	Manila Ropes	As per requirement
12	Turn buckles & chain shackles	assorted
13	Set of Carpenter tools	1 set
14	Crow Bar (0.5, 1.0, 1.5 meter)	2 each
15	Set of preservatives	As per requirement
16	Torque Spanners / WrenchesAs per requirement	
17	All general purpose T&P	As per requirement

Notes:

1) Crane Capacity & quantity to be adequate as per site requirements.

2) The above list specifies only major T & P (may not be complete) to be deployed by the contractor. All additional/ other tools and plants required for timely and satisfactory completion of works/ testing etc. shall also be deployed by the contractor with in the finally accepted rates/ prices.

3) Other terms and conditions regarding above shall be as per the special condition of the contract clause no. 37 of section III A (Tools & Plants, IMTEs)

Annexure IV

INDICATIVE LIST OF TOOLS AND PLANTS FOR ERECTION TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST

S.NO.	ITEM/ DESCRIPTION	QTY.(Nos.)
1	Double end spanners upto 60mm	2 No. each
2	Ring spanners upto 60mm	2 No. each
3	Hammer 500 gm, 1 Kg, 2Kg, 4 Kg,8 Kg 2 No. each	
4	Nylon/ Wooden Hammer	As required
5	Box spanner set upto 60 mm	1 No. each
6	Set of Slogging spanner upto 60 mm 1 No. each	
7	Torque Wrenches upto 2000 NM	1 set
8	~~Impact Wrench (Pneumatic) upto 2400 NM~~	NOT REQUIRED
9	Chiesel 14mm, 22mm	1 No. each
10	Hacksaw 400 mm with blades	2 nos
11	Electrician Tool Kit	As required
12	Soldering iron (35/ 125 Watts)	As required
13	Plier 1", 1 1/2"	1No. Each
14	Screw driver set	1No. Each
15	Letter punch A-Z (10mm)	1 set
16	Number punch 0-9 (10mm)	1 set
17	Chain pulley block 1T, 3M	2 nos
18	Chain pulley block 5T, 3M	2 nos
19	Pull lift 5 T	2 nos
20	Turn Buckle (2 T, 5 T)	4 each
21	Mechanical Jacks (5, 10, 20, 35 T)	4 each
22	Hydraulic Jacks (5, 10, 20T)	4 each)
23	Gas cutting set (Acetyline Cylinder, Oxygen Cylinder cutting set with hose & regulator.	As required
24	Brazing torch set (With oxygen, acetylene cylinder)	As required
25	Compressed air spray painting Unit	1 No.
26	Air hose 16mm dia.	As required
27	Aluminium ladder 4 M length	2 nos
28	Welding generator (300/ 600 A) with cable & holder	As required
29	Air Arc Gouging Arrangement	1 no.
30	Electrode Oven	4 nos
31	Wire Brush	As required
32	Flat/ round/ triangular/ square/ needle file (assorted)	1 set
33	Oil stone / oil can	As required
34	Allen key set (MM/ BA/ Inch size - assorted)	1 set each
35	Crow bar (1.5M, 2.1M)	2 Each
36	Scissor	2 nos
37	Leather gloves / Rubber glouses/Cotton gloves	As required
38	Goggles green	As required
39	Mobile power boards	6 nos.
40	Set of carpentar tools	1 set
41	Plumb-with line dori	1 no.
42	MIG/ TIG Welding machine with accessories	As required
43	Angle grinder (AG7, AG9) machine	4 nos each
44	Sander (HS7)	4 nos
45	Straight grinder (GQ4, GQ 6)	4 nos
46	Pneumatic straight grinders (use upto 100 mm dia)	4 nos
47	Pneumatic Angle grinders (use upto 100 mm dia)	4 nos.
48	Flexible shaft grinder (FF2)	3 nos
49	Portable pneumatic drill machine (upto 40 mm)	1 set
50	Portable electric dril machine (upto 40 mm)	1 set

51	Fire fighting equipment for A,B,C class of fires	Adequate Qty
~~52~~	~~Hydraulic test pump (100 Kg/cm2)with pressure gauge~~	NOT REQD
53	Pipe bending machine for pipe upto 50 mm	1 no
54	Bench Vice	2 nos
55	Pipe Vice	2 nos
56	Scrapper (Flat/ triangular/ half round) 2 each	
57	First Aid Box with medicine	2 sets
58	Centre punch	4 nos
59	Hole Punch (assorted size)	2 nos each size
60	Portable drilling Machine (concrete upto 30 mm)	As required
61	Air Compressor	As required
62	DG sets- 25 kva (INCLUDING RESIDENTIAL AND OFFICE ACCOMODATION AT SITE	As required (Minimum Requirement- 4 Nos.)
63	Ultrasonic Testing Equipment with recording facility (For spiral weld joints and other testing)	As required

Notes:-

1) The above list specifies only major T & P (may not be complete in items or numbers) to be deployed by the contractor. All additional/ other tools and plants required for timely and satisfactory completion of works/ testing etc. shall also be deployed by the contractor with in the finally accepted rates/ prices.

2) Other terms and conditions regarding above shall be as per the special condition of the contract clause no. 37 of section III A (Tools & Plants, IMTEs)

Annexure V

LIST OF T&P AND IMTE FOR TRANSFORMER ERECTION/ COMMISSIONING TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST

S.NO.	ITEM/ DESCRIPTION	QTY.(Nos.)
1	High vacuum filter machcine (2000 L P H)	1
2	Vacuum pump for evacuation of transformer tank.	1
3	Hydraulic Jacks 10 Tons	5
4	Wooden sleepers	10
5	Tarpauline for covering (3M x 6M)	4
6	Hand tools (spanners, screwdrivers, hammers etc)	2 sets
7	Slings, ropes, manila rope, D-shackes, spanners (upto 36 mm size) & other fitter / electrician hand tools.)	2 sets
8	Pully 3/5 tonnes	2 each
9	Chain Pulley blocks(3T, 5T)	2 each
10	Welding machine set.	1 set
11	Gas cutting set with gas & cutting set.	1 set
12	Winch 10 Tons capacity	1 no.
13	Multimeter	1 set
14	Meggar Hand operated 500V / 1000V	1 set
15	Meggar Motorised 2500v / 5000v	1 set
16	Transformer turn ratio meter	1 set
17	single phase variac 0-260 V, 8 Amps.	1 set
18	Oil BDV Test Kit 0-100 KV	1 set
19	Tong tster 0-30-60 Amps.	1 set

Notes:

1) The above list specifies only major T & P (may not be complete) to be deployed by the contractor. All additional/ other tools and plants required for timely and satisfactory completion of works/ testing etc. shall also be deployed by the contractor with in the finally accepted rates/ prices.

2) Other terms and conditions regarding above shall be as per the special condition of the contract clause no. 37 of section III A (Tools & Plants, IMTEs)

3) The above list is indicative only. Actual requirement of the T&P and IMTE shall be arrived/agreed upon with BHEL Engineer at site

Annexure VI

INDICATIVE LIST OF IMTE`s (ELECTRICAL) TO BE ARRANGED BY THE CONTRACTOR AT HIS OWN COST

S.NO.	ITEM	QTY.(Nos.)
1	Analog multimeter voltage AC/DC 2.5-2500VCurrent AC /DC-100mA to 10A, Resistance upto 200 Mohm	As per requirement
2	Digital Multimeter	As per requirement
3	Meggar hand operated 500V / 1000V 200 Mohms	As per requirement
4	Meggar motorized 2500V / 500V 2500 00 Mohms	As per requirement
5	Phase sequence indicator 110-450V	As per requirement
6	Frequency meter 0-115-230-440 0-300-600A	As per requirement
7	Tong tester	As per requirement
8	Single phase variac 0-220 V, 8/15A As per requirement	
9	Three phase variac 0-415, 8/15A	As per requirement
10	Milli volt meter 600-60 mv D.C	As per requirement
11	Rheostat 0-250 ohms 2A, 0-8 Ohms 15A, 0-8 Ohms 15A, 0-26 Ohms 5A, 0-165 ohms 2 Amps	As per requirement
12	Hand tachometer(Digital) 0-15000 r.pm	As per requirement
13	Function Generator - Input/ output 220V AC/ 30 V DC, 20 VA	As per requirement
14	A.C. Voltometer 0-75-150-300-600V	As per requirement
15	D.C. Voltmeter 0-75-150-700-600	As per requirement
16	A.C. Ammeter 0-5-10 Amps.	As per requirement
17	D.C. Ammeter 0-1-2.5-5 Amp.	As per requirement
18	Dual channel, double beam Oscilloscope 20 M HZ	As per requirement
19	Secondary injection Kit 0 to 5 Amp	As per requirement
20	Digital micro Ohm meter	As per requirement
21	A.C. H.V..Test Kit 0-40 KV, 400 KVA	As per requirement
22	Vibration Measurement equipment	As per requirement
23	Dead weight Testser for calibration of pressure gauge.	As per requirement
24	Wheatstonebridge.	As per requirement
25	Kelvin's double bridge	As per requirement
26	Partial discharge monitoring	As per requirement
27	U.V. Recorder	As per requirement
28	C.T.'s 50/100/200/500 by 5A	As per requirement
29	P.T's 3.3/6.6/11/13.8by 110 V	As per requirement
30	D.C. Shunt 2000A / 10 mV	As per requirement
31	Stop watch	As per requirement
32	Precision Thermometer	As per requirement
33	Sound level meter 150 db.	As per requirement
33	Temperature measurement system with RTD Measuring stator	As per requirement

Notes:

1) The above list specifies only major IMTE - Electrical (may not be complete) to be deployed by the contractor. All additional/ other IMTEs required for timely and satisfactory completion of works/ testing etc. shall also be deployed by the contractor with in the finally accepted rates/ prices.

2) Other terms and conditions regarding above shall be as per the special condition of the contract clause no. 37 of section III A (Tools & Plants, IMTEs)

3) No T&P, IMTEs shall be arranged by BHEL

4)The above list is indicative only. Actual requirement of the IMTE shall be arrived/agreed upon with BHEL Engineer at site

ANNEXURE-VII

MODEL RULES FOR HEALTH AND SANITARY ARRANGEMENTS FOR CONTRACTOR'S WORKMEN TO BE PROVIDED BY THE CONTRACTOR.

1.1 APPLICATION

These rules shall apply to all buildings and erection works of Salma Dam Project

1.2 DEFINITIONS

i) Work place"/or work site means a place at which, at an average 50 or more workers are employed, in connection with execution of work

ii) Large work place" or large work site means a place at which at an average 500 or more workers are employed in connection with execution of work

1.3 FIRST AID

(i) At every work place, first aid appliances including an adequate quantity of sterilized dressings and sterilized cotton wool shall be maintained in a readily accessible place. The appliances shall be placed in good order and shall be placed under the charge of a responsible person who shall be readily available during working hours.

(ii) At large work places, where hospital facilities are not available within easy distance of the work, First Aid posts shall be established and run by trained compounders.

(iii) Where large work places are remote from regular hospitals, an indoor ward shall be provided with one bed for every 250 employees

(iv) Where large work places are situated in cities/towns or in their suburbs and no beds are considered necessary owing to the proximity of city or town hospitals, suitable transport will be provided to facilitate removal of emergent cases to the hospitals. At other work places, some conveyance facilities such as car shall be kept readily available to take injured Jli person(s) or seriously ill person(s) to the nearest hospital.

1.4 DRINKING WATER.

(i) In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking .

(ii) Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.

(iii) Every water supply storage shall be at distance *of* not less than 15 metres from latrine, drain or any other source of pollution, Where water has to be drawn from an existing well which is within such proximity of latrine, drain or

any other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be entirely closed in and be provided with trap door which shall be dust and water proof.

(iv) A reliable pump shall be fitted to each covered well, the trap door shall *be* kept locked and opened only for cleaning or inspection which shall be done at least once in a month.

1.5 WASHING AND BATHING PLACES

i) Adequate washing and bathing places shall be provided. separately for men & women.

ii) Such places shall be kept in a clean and drained condition.

1.6 LATRINES AND URINALS

There shall be provided within the precincts of every work place adequate number of latrines and urinals in an accessible place, If women are employed, separate urinals and latrines shall be provided for them, All these shall be cleaned regularly and kept in a sanitary condition

1.7 DISPOSAL OF EXCRETA

Unless otherwise arranged for by the local sanitary authority. arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incinerator approved by the local health officer or Engineer Incharge. Alternatively. excreta may be disposed of by putting a layer of nightsoil at the bottom of pucca tank prepared for the purpose and covering it with a 250 mm layer of waste or refuse and then covering it up with a layer of earth for a fortnight (when it will turn into manure).

1.8 PROVISION OF SHELTER DURING REST

At every work place there shall be provided free of cost for the use of labour. Two suitable sheds. one for meals and the Other for rest.

1.9 CRECHES

At every work place, at which 50 or more women workers are ordinarily employed there shall be provided a crech for the use of children. belonging to such women.

1.10 CANTEEN

A cooked food canteen on a moderate scale shall be provided for the benefit or'" workers wherever it is considered expedient

The above rules shall form an integral part of the contract.

SAFETY PRECAUTIONS

2.1 Suitable scaffolds shall be provided for workmen for all Works that cannot be safely be done from the ground, or from solid construction except such short period work as can be. done safely from ladders. When a ladder is used, an extra workman shall be engaged for holding the ladder. If the ladder is used for carrying materials as well, suitable footholds and handholds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 0.25 to 1 (0.25 horizontal and I vertical).

2.2 Scaffolding or staging more than 3.6 m above the ground or erected floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted, braced and otherwise secured at least 0.9 m high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of the materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying form the structure.

2.3 Working platform, gangways and stairways shall be so constructed that they do not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 m above ground level or floor level, they shall be closely boarded, and shall have adequate width and shall be suitably fastened.

2.4 Every opening in the floor of a structure or in a working platform shall be pro vided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 0.9' m. Employees working on steep slopes or otherwise subject to possible falls from levels not protected by guardrails or safety nets, shall be secured by safety belts.

2.5 Safe means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9.0 m in length while the width between side rails in hung ladder shall, in no case, be less than 28 cm, for ladder upto and including 3.0 m in length. For longer ladders, this width shall be increased at least by 6 mm for each additional 30 cm of length. Uniform step spacing shall not exceed 30 cm. Adequate precautions shall be taken to prevent danger form electrical equipment. No materials on any of the Sites of Work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

2.6 EXCAVATION AND TRENCHING.

All trenches, 1.2 m or more in depth, shall at all times, be supplied with atleast one ladder for each 30 metres length or fraction thereof Ladder shall be extended form bottom of the trench to at least 0.9 m above the surface of the ground. The side of the trenches which are 1.5 m or more in depth shall be stepped back to give suitable

slope or securely held by timber bracing, so as to avoid the danger of sides to collapse. The excavated materials shall not be placed within 1.5 m of the edges of the trench or half of the depth by the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances undermining or undercutting shall be done.

2.7 DEMOLITION.

Before any demolition work is commenced and also during the process of the work:

(i) All roads and open areas adjacent to the site shall either be closed or suitably protected

(ii) No electric cable or apparatus which is liable to be a source of danger over a cable or apparatus used by the operator shall remain electrically charged.

(iii) All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other pm of the structure shall be overloaded with debris or materials as to render it unsafe.

2.8 All necessary personal safety equipment as considered adequate by the Engineer-in-Charge shall be kept available for the use of the persons employed on the Site and maintained in condition suitable for immediate use, and the Contractor shall take adequate steps to ensure proper use *of* equipment by those concerned.

(i) The Contractor shall provide rubber gauntlets, gloves, mats, boots and galoshes, insulated platform and stools, safety belts, hand lamps, tower wagons and other special insulated devices as required for working on electrical equipment and apparatus.

(ii) Workers employed on mixing asphaltic materials, cement mortar and cement concrete shall be provided with protective footwear and protective goggles.

(iii) Those engaged in mixing or stacking *of* cement bags or any materials which is injurious to eyes shall be provided with protective goggles.

(iv) Those engaged in welding Works shall be provided with welder's protective eye shields.

(v) Stone breakers shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

(vi) The Contractor shall not employ any person below the age *of* 18 years. Whenever a person above the age *of* 18 years is employed on the work *of* lead painting, the following precautions shall be taken:

(a) No paint containing lead, sulphate *of* lead or product containing their pigments shall be used except in the form *of* paste *or* readymade paint.

(b) Suitable face masks shall be supplied for use by the workers when paint is applied in the form *of* spray or a surface having lead paint dry rubbed and scrapped.

(c) Overalls shall be supplied by the Contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.

(d) Measures shall be taken, whenever required, in order to prevent danger arising from the application *of* a paint in the form *of spray.*

(e) Measures shall be taken. whenever practicable, to prevent danger arising out from dust caused by dry rubbing down and scrapping.

(f) Suitable arrangements shall be made to prevent clothing put off during working hours, being spoiled by painting materials.

(g) Cases of lead poisoning and suspected lead poisoning shall be notified.

(h) Instructions with regard to special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

(vii) The Contractor shall observe ail safety precautions to control the noise on all Sites and also provide all workmen deployed in the affected areas with the necessary equipment for safety against noise.

2.9 When the Work is done near any place where there is risk of drowning, all necessary equipment shall be provided and kept ready for use and all necessary steps taken for

prompt rescue of any person in danger and adequate provision shall be made for prompt first aid treatment of all injuries likely to be sustained during the course of the Work.

2.10 Use of hoisting machines and shackle including their attachments, anchorage and supports shall conform to the following standards or conditions:

(i) These shall be of good mechanical construction. sound materials and adequate strength and tree from patent defect and shall be kept in good working order

(ii) Every rope used in hoisting or lowering materials or as. a means of suspension shall be of durable quality and adequate strength and free from patent defects.

(iii) Every crane driver or hoisting appliance operator shall be properly qualified for his job.

(iv) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gears referred to above shall be plainly marked with the safe working load.

In case of hoisting machine having a variable safe working load, each safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing. The capacity of the hoisting ,machines shall be periodically checked.

The Contractor shall notify the safe working load of the machines to the Engineer-in-Charge whenever he brings any machinery to Site of work and gets it verified by the Engineer-in-Charge or his representative.

2.11 Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards.

Hoisting appliances shall be provided with such means as shall reduce to the minimum, the risk of any part of a suspended load becoming accidentally displaced. When workmen are employed on or near electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boot as may be necessary, shall 'be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

2.12 All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near places of work.

2.13 These safety provision shall be brought to the notice of all concerned by display on a notice board at a prominent place on the Site. The person responsible for compliance of the safety code shall be named therein by the Contractor.

2.14 To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by Contractor shall be open to inspection by the Labour officer or the Engineer-in-Charge.

2.15 The Contractor shall at all times exercise reasonable and proper precautions for iti - the safety of the people on the Works and shall comply with the provisions of current safety law and building and construction codes as may be applicable. All machinery and equipment and other sources of physical hazards shall be properly guarded. The Contractor shall have a full time staff exclusively in charge of securing the safety of the Work ensuring that all safety regulations are followed and in charge of indoctrination and teaching course on safety to the work force.

2.16 The Contractor shall provided all necessary fencing and lights to protect the public from accidents and shall be- bound to bear all the expenses of defence of every suit, action and other proceedings at Law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action and proceedings to nay such persons or which may, with the consent of the Contractor, be paid to compromise any claim by any person.

2.17 About his employees, the Contractor shall ensure as follows:

(i) Each employee shall be provided initial indoctrination regarding safety by the Contractor so as to enable him to conduct his Work in a safe manner.

(ii) No employee shall be given a new assignment of work unfamiliar to him without proper introduction as to the hazardous incident thereto, both to himself and his fellow employees.

(iii) Under no circumstances shall an employee hurry or take unnecessary chances when working under hazardous conditions.

(iv) Employees shall not leave naked fires unattended. Adequate fire fighting equipment shall be provided at crucial locations.

(v) Employees under the influence of any intoxicating beverage, even to the slightest degree, shall not be permitted to remain on work.

(vi) There shall be suitable arrangement on every site for rendering prompt and sufficient first aid to the injured under the guidance of the Medical Officer.

(vii) The stair cases and passage ways shall be adequately lighted.

(viii) The employees, when working around moving machinery, shall not be permitted to wear loose garments. Safety shoes are recommended when working in shops or places where materials or tools are likely to fall. Only experienced workers shall be permitted to go behind guard rails or to clean around energized or moving equipment.

(ix) The employees shall use the standard protection equipment intended before and after it is used.

2.18 The following precautions shall be taken for fire prevention:

(i) All construction areas and storage yards shall be kept clean and well arranged.

(ii) A clear space of 15 metres around the outer boundary of saw mill and lumber storage area may be provided. All lumber shall be stored in sections with fire breaks with a distance of 15 metres between consecutive section.

(iii) All combustible waste material wood scaling and soiled rags etc shall be removed daily and burnt in suitable burning area. The saw mill and lumber yard shall be kept free form accumulation of combustible debris

(iv) Fires, welding, flame cutting shall in general not be permitted in combustible area. Fires and open flame devices shall not be left unattended.

(v) Smoking shall be prohibited in all fire prone areas, flammable material storages viz. Carpentry, paint shops, garages, service stations etc. "No smoking" signs shall be pasted on all such areas.

(vi) Accumulations of flammable liquids on floors, walkways etc. should be prohibited. All spills of flammable liquids shall be cleaned up immediately,

(vii) Smoke pipes from Diesel Engines passing through-roof of combustible material e.g, in compressor stations on various Sites shall be insulated by asbestos. All joints of smoke pipe shall be riveted, welded or otherwise securely fastened together and supported to prevent displacement or separation. The joints shall not be leaky.

(viii) Flammable liquids, lubricants etc. shall be handled and transported in containers and drums which can be kept tightly capped.

(ix) Storage of fuels and other flammable materials and liquids shall be set no' less than 100 m away from the Works and permanent installations. All. storage installations and tanks shall conform to the regulations set out in relevant Indian Standards

(x) Petrol or other flammable liquids with a flash point below 100 degrees Centigrade-shall-not- be-used-for-cleaning purpose

(xi) Oxygen cylinders shall not be stored with combustible materials.

(xii) All electric installation shall be properly earthen. Repairs shall not be made on electrical circuits until the circuit has been de-energized.

2.19 THE FOLLOWING FIRE FIGHTING ARRANGEMENTS SHALL BE MADE BY THE CONTRACTOR:

(i) Fire extinguishers and fire buckets filled with dean dry sand, painted red,

shall be provided at all IITe hazardous locations viz. Bathing and Mixing Plant, Winch houses, Workshops, store yards, Saw-mill, Switch Gear, Room, Compressor Stations, Office establishments etc. The extinguishers shall be inspected, serviced and maintained in accordance with manufacturer's instructions. The inspection shall be evidenced by notations on tag attached to the extinguisher.

(ii) Full reliance shall never be placed on portable hand extinguishers as all of these have a very limited capacity. Water, in ample quantity and under adequate pressure, shall always be available for fire fighting.

(iii) Where a group of work points are located beyond the range of protection from a public water supply, the installation of a water system for private fire protection shall be warranted

(iv) Evacuation facilities and fire exit shall be provided at all locations featuring fire hazards.

(v) Siren or, other suitable fire alarm arrangement shall be made on all Sites. Warning signs shall be pasted at all locations having fire hazards.

(vi) All staff shall be conversant with the use of all type of fire extinguishing apparatus.

(vi) In the event of fire on electrical mains or apparatus, the effected part shall immediately be completely isolated from its source of supply of electrical energy.

(viii) Demonstrations and training in fire fighting shall be conducted at sufficient intervals to ensure that sufficient personnel are familiar with and are capable of operating fire fighting equipment.

2.20 When any work is carried on, which is likely to affect the security or stability of an installation or structure or any part thereof and endanger any person employed, all practicable precautions shall be taken by shoring or otherwise to prevent collapse of structure or fall of any part thereof and thus remove the cause of danger to such structures and the persons employed.

2.21 For persons engaged in handling of corrosive materials, adequate equipment shall be provided.

2.22. Where, in connection with any grinding, cleaning, spraying or manipulation of any material, there is emission of dust or fume of such character and to such extent as is likely to be injurious to the health of persons employed, all practical measures shall be taken by securing adequate ventilation or by the provision and use of suitable respirators or otherwise to prevent inhalation of such dust and fume.

2.23 In addition to instructions contained here-in-above the safety regulations contained in the following IS Codes shall also apply wherever the provisions in The: codes are exhaustive in nature.

(i)	IS: 3696-1987 (Part-I) (Reaffirmed 1991)	Safety Code of Scaffolds & Ladders (Pt. I Scaffolds)

(ii)	IS: 3696-1991 (Part-II)	Safety Code of Scaffolds & Ladders (Pt.II Scaffolds)
(iii)	IS: 3016-1982 (Reaffirmed 1990)	Fire precaution in welding and cutting operations
(iv)	IS - 5216-1982 Part 1 & 2 (Reaffirmed 1990)	Guide-for-Safety-procedures-and Practices in Electrical work Part - 1 - General Part-II – Life saving techniques

2.24 Notwithstanding the above provisions, the BHEL/BHEL's Customer may require the Contractor to follow any other Act or Rules in force in Afghanistan / India in respect of Safety Precautions so as to ensure the safety of the Workmen and the Plant and the Contractor shall promptly comply with such requirements.

ANNEXURE VIII

DETAILS OF FACILITIES TO BE PROVIDED BY CONTRACTOR TO BHEL/ VENDOR/ STAFF WHICH ARE BROAD BASED GENERALLY NOT LIMITED TO FOLLOWING BUT THE CONTRACTOR HAS TO EXECUTE ENTIRE WORKS TO THE SATISFACTION OF BHEL ENGINEER:
(Bidders to consider 20 months period for providing these facilities)

1. STORAGE AREA AND CLOSED STORAGE SHED

STORAGE AREA OF APPROXIMATELY 3000 SQ.M FULLY LEVELLED AND COMPACTED PLATFORM FOR EQUIPMENT WITH PROPER DRAINAGE FOR OUTFLOW OF WATER, WATER SUPPLY SYSTEM. SUITABLE ROADS FOR PROPER MOVEMENT OF HEAVY CONSIGNMENTS,WBM APPROACH ROAD 3M WIDTH 250RM APPROX. FOR STORES, STORAGE AREA, 300RM APPROX. PROPER BARBEDWIRE FENCING ALONGWITH POLE 2.5M C/C & GATE, SMALL ROOM ADJACENT TO GATE FOR SECURITY GUARD FOR SAFETY, WITH 1 CLOSED SHED ON COLUMNS AND STRUSSES OF SIZE 500 SQ.M WITH ROOFING & WALLS SUITABLE FOR THE WEATHER CONDITIONS EXPECTED AT SITE , PROPER ILLUMINATION WITH ELECTRIC FITTINGS WITH LIGHTING IN STORE , 15 ELECTRIC POLES FITTINGS 1 SMALL ROOM WITH FURNITURE FOR STOREKEEPER , FINAL DETAILS AS PER INSTRUCTIONS OF BHEL SITE ENGINEER. WRITEUP AND SKETCH IS ENCLOSED.

2. OFFICE SPACE

2.1 OFFICE SPACE IS EXPECTED TO BE PROVIDED BY CUSTOMER. FURNISHING AND MAINTANANCE OF SAME WITH MINIMUM 7 EXECUTIVE TABLES & EXECUTIVE CHAIRS & SIDERACKS EACH AND 10 VISITOR CHAIRS, 2 BIG ALMIRAHS WITH LOCKERS, 3 SMALL ALMIRAHS, ALL ROOMS PROVIDED WITH AIR CONDITIONING / HEATING FECILITIES, 1 NO WATERCOOLER WITH RO SYSTEM ,ALL ELECTRICAL FITTINGS, PHONE WITH CONNECTION, INTERCOM FACILITY FOR 10 LINES FAX,INTERNET FACILITIES, MINIMUM 2 COMPUTERS WITH 2 LASER PRINTERS-1 COLOUR, SCANNER WITH ALL ACCESSORIES AND LATEST LICENSED SOFTWARE. PARKING SPACE, PROPER LIGHTING FITTINGS ON ALL CORNERS. OFFICE/PANTRY ASSISTANCE, COOKS ETC. ALL WATER PIPES/TANKS TO BE COVERED WITH GLASS WOOL KEEPING IN VIEW SEVERE COLD CONDITIONS EXPECTED AT SITE.. FINAL DETAILS AS PER INSTRUCTIONS OF BHEL SITE ENGINEER.

2.2 CONSTRUCTION OF OFFICE (OPTIONAL)

CONSTRUCTION OF OFFICES OF SIZE – 1NO. 6MX4M ATTACHED WITH TOILET AND PANTRY, 4 NOS ROOMS 4MX3M EACH, 6MX4M SPACE FOR VISITORS, 1 N0 COMMON TOILET FACILITY SUITABLE FOR 6/8 PERSONS EXPECTED AT SITE

CONSTRUCTION SHALL BE WITH BRICK/STONE MASONARY FOUNDATIONS AND SUPER STRUCTURE, WITH RCC ROOFING, WOODEN DOORS AND WINDOWS, TILE FLOORING, AVERAGE FINISHING COMPLETE WITH ALL ELECTRIFICATION, PLUMBING AND SANITORY WORK SUITABLE FOR THE WEATHER CONDITIONS EXPECTED AT SITE. FINAL DETAILS SHALL BE AS DECIDED BY BHEL ENGINEER

- **OPTIONAL RATE TO BE QUOTED BY BIDDER**

3. RESIDENTIAL FLATS AT SITE:

4 NOS. 4 ROOM FLATS WILL BE PROVIDED BY CUSTOMER AT SITE. MAINTENANCE OF ALL FACILITIES SUCH AS FURNISHINGS, BEDS. LINEN, TABLES, CHAIRS, ALMIRAHS GEYSER, WASHING MACHINE, AIRTCONDITIONERS/HEATERS IN EACH ROOM, TELEPHONES/TV WITH DISH ANTENNA, MICROWAVEOVEN IN MESS ROOM ETC. HAS TO BE PROVIDED. PROPER AND HYGENIC MESS FECILITIES FOR OFFICE AS WELL AS RESIDENTIAL PREMISES WITH COOKS, HELPERS FOR AVERAGE ABOUT 10-12 PERSONS. ALL WATER PIPES/TANKS TO BE COVERED WITH GLASS WOOL KEEPING IN VIEW SEVERE COLD CONDITIONS EXPECTED AT SITE..FINAL DETAILS AS PER INSTRUCTIONS OF BHEL SITE ENGINEER.

4. GUEST HOUSE AT HERAT

1 SET- ONE ROOM WITH 2 BEDS AND DRAWING CUM DINING ROOM FACILITY WILL BE PROVIDED BY CONTRACTOR AT HERAT. MAINTENANCE OF ALL FACILITIES SUCH AS FURNISHINGS, TAPESTRY, BEDS. LINEN, TABLES CHAIRS, ALMIRAHS GEYSER, AIRTCONDITIONERS/HEATERS IN EACH ROOM TV WITH DISH ANTENNA/TELEPHONE IN DRAWING ROOM, WASHING MACHINE ETC. HAS TO BE PROVIDED. PROPER AND HYGENIC MESSING FECILITIES WITH COOKS, HELPERS. INTERNET FECILITIES, MINIMUM 1 COMPUTER WITH LASER PRINTERS-1 COLOUR, LASER WITH LATEST LICENSED SOFTWARE, I N0 TELEFAX, REFRIGERATOR,WATERCOOLER WITH RO PLANT, MICROWAVE OVEN.

ONE OFFICIAL OF CONTRACTOR HAS TO BE STATIONED AT HERAT FOR COORDINATING WITH BHEL AND OTHER LOCAL CUSTOMS/GOVT AGENCIES AND INDIAN COUNSULATE. FINAL DETAILS AS PER INSTRUCTIONS OF BHEL SITE ENGINEER.

5. VEHICLES AT SITE AND HERAT

AT SITE

ONE AC VEHICLE DURING INITIAL SIX MONTHS AND TWO AC VEHICLES FOR BALANCE CONTRACT PERIOD WITH DRIVER, FUEL AND CONSUMABLES.

AT HERAT

ADDITIONALLY ONE AC VEHICLE AT HERAT WITH DRIVER, FUEL, CONSUMABLES FOR EXCLUSIVE USE OF BHEL/BHEL's VENDORS FOR LOCAL AND HERAT-SITE-HERAT VISITS FOR TOTAL CONTRACT PERIOD (FOR OCCASSIONAL USE FOR ABOUT SEVEN TO TEN DAYS PER MONTH).

NOTES:

1. **For infrastructural works and facilities to be provided by the contractor as detailed in above Annexure, bidders to consider 20 months period. For these facilities, if requird, beyond 20 months, requirement of facilities and their rates shall be mutually discussed and finalised.**

2. Against each item of this Annexure, the contractor shall furnish detailed specifications/quantities being offered by him in Part-I (Technical Bid) bid.

ANNEXURE-IX

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.

Tenderers Name and Address

Place: (Signature of the Tenderer with stamp)

Date:

ANNEXURE - X

GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION (RA)

Against this enquiry for the subject item/ system with detailed scope of supply as per our tender specification, BHEL-PSNR, NOIDA may resort to "REVERSE AUCTION PROCEDURE" i.e. **ONLINE BIDDING on INTERNET.**

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on Internet.
3. BHEL will inform the vendor in writing in case reverse auction, the details of service provider to enable them to contact and get trained.
4. Business rules like event date, time, start price, bid decrement, extensions, etc. also will be communicated through service provider for compliance.
5. Vendors have to fax the compliance form in the prescribed (provided by service provider) before start of Reverse auction. Without this the vendor will not be eligible to participate in the event.
6. BHEL will provide the calculation sheet (e.g.: EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like packing & forwarding charges, Taxes and duties, Freight charges, Insurance, Service tax for services and loading factors (for non-compliance to BHEL standard Commercial terms and conditions.) for each the vendor to enable them to fill-in the price and keep it ready for keying in during the auction.
7. Reverse auction will be conducted on schedule date & time.
8. At the end of reverse auction event, the lowest bidder value will be known on the network.
9. The lowest bidder has to fax the duly signed filled-in prescribed format as provided on case-to-case basis to BHEL through service provider within 24 hours of auction without fail.
10. Any variation between the on-line bid value and signed document will be considered as sabotaging the tender process and will invite disqualification of vender to conduct business with BHEL as per prevailing procedure.
11. In case BHEL decides not to go for Reverse auction procedure for this tender enquiry, the price bids and price impacts, if any already submitted and available with BHEL shall be opened as per BHEL standard practice.

ANNEXURE-XI

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……..

ANNEXURE -XII

FORMAT FOR NO DEVIATION CERTIFICATE

(To be submitted in the bidder's letter head)

Bharat Heavy Electricals Limited
Power Sector – Northern Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar,
NOIDA – 201 301. INDIA

Sub.: No Deviation Certificate for the work of "MATERIAL HANDLING OF ALL ITEMS, EXECUTION OF INFRASTRUCTURAL CIVIL WORKS AND ERECTION, TESTING, COMMISSIONING, TRIAL OPERATIONS & HANDING OVER OF FRANCIS TURBINES, GENERATORS AND THEIR AUXILIARIES, EXCITATION SYSTEMS ETC FOR 3x14 MW SALMADAM HYDRO POWER PROJECT, AFGHANISTAN".

TENDER NO. **BHEL: NR: SCT: SALMA-HEP:615**

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed / modified the tender documents as appeared in the website and in case of observance at any stage; it shall be treated as null and void. We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT and confirm our acceptance to reverse auctioning process and we hereby convey our unqualified acceptance to all terms and conditions as stipulated in the tender and NIT. In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer strictly in accordance with tender instructions.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized
representative of the bidder)

ANNEXURE-XIII

RATE SCHEDULE

(A) MAIN RATES

Sl. No	DESCRIPTION OF WORK	Rate in USD (In figures and words)
1	Lumpsum price for materials Handling of all items, execution of infrastructural civil works **and** erection, testing, commissioning, trial operations & handing over of Francis Turbines, Generators and their auxiliaries, Excitation systems etc of 3 x 14 MW HYDRO UNITS OF SALMADAM HEP as per the tender specifications. Lumpsum price for construction of store shed 500 sqmm as detailed in Annexure VIII (1) included in above.	LUMPSUM PRICE

The split up of rates for material handling, erection and infrastructural facilities shall be 10%, 70% and 20% respectively. Contractors to note this and submit offer accordingly.

(Seal and signature of Tenderer)

(B) OPTIONAL RATES:

Sl. No.	DESCRIPTION OF WORK	Rate in USD (in figures and words)
2	For scope of work as defined in this tender in respect of all items for taking delivery from carriers Godowns **at Herat in Contractor's own Trucks/Trailers** and bringing the materials to site. **(Rate in USD Per MT)**	
3	Collecting and loading of materials including packing (if required) in carriers Trucks / Trailers (to be placed by Carriers) at the plant stores/ project area for dispatch of material from site. **Rate in USD per MT**	
4	Lumpsum price in USD for Construction of Office Premises **as per clause 2.2 of Annexure-VIII of NIT**	

NOTES:

1. Incomplete offer received may not be considered for the subject work.

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. 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.

4. Optional Items (Item No. 2, 3 &4) shall be considered for evaluation purpose. For Item No. 2 & 3, the quantity shall be considered as 50 MT for each of these items (for evaluation purpose).

(Seal and signature of Tenderer)

ANNEXURE - XIV

BANK GUARANTEE FOR PAYMENT OF ADVANCE

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 Electricals Limited a Company incorporated under the Companies Act, 1956, having its registered office at BHEL House, Siri Fort, New Delhi - 110049 through its unit at Power Sector-Northern Region, Noida, Distt. Gautam Budh Nagar, (U.P.) India, hereinafter called "The Company" (which expression shall unless repugnant to the context or meaning thereof be deemed to include its successors and assigns).

WHEREAS M/s. _____(hereinafter referred to as the Contractor) have entered into a Contract arising out of Letter of Intent no._____dtd_____(hereinafter referred to as "the Contract") for the --< Name of_work >-- with the Company.

AND WHEREAS the Contract inter-alia provides that the Company will pay to the Contractor interest bearing advance of Rs._____ (Rupees_____ only) on certain terms and conditions specified in the Contract subject to the Contractor furnishing a Bank Guarantee for Rs._____ (Rupees_____ only) in favour of the Company.

AND WHEREAS the Company has agreed to accept a Bank Guarantee from a Bank to cover the said advance.

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.

NOW THIS DEED WITNESSES AS FOLLOWS:-

(1) In consideration of the Company having agreed to advance a sum of Rs._____ (Rupees_____ only) to the Contractor , the Guarantor do hereby guarantee the due recovery by the Company of the said advance with interest thereon as provided according to the terms and conditions of the Contract. If the said Contractor fails to utilise the said advance for the purpose of the Contract and /or the said advance together with interest as aforesaid is not fully recovered by the Company the Guarantor do hereby unconditionally and irrevocably undertake to pay to the Company without demur and merely on a demand, to the extent of the said sum of Rs._____ (Rupees_____ only) any claim made by the Company on them for the loss or damage caused to or suffered by the Company by reasons of the Company not being able to recover in full the advance with interest as aforesaid.

(2) The decision of the Company whether the Contractor has failed to utilise the said advance or any part thereof for the purpose of the Contract and / or as to the extent of loss

or damage caused to or suffered by the Company by reason of the Company not being able to recover in full the said sum of Rs._____ with interest if any shall be final 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.

(3) 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 of any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing the Guarantor from its liability under this guarantee.

(4) The Guarantor further agrees that the Guarantee herein contained shall remain in full force and effect during the period till the Company discharges this Guarantee, subject to 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.

(5) 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.

(6) 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 unrealised.

(7) 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.

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

(9) The Guarantor hereby declares that it has power to execute this Guarantee under its Memorandum and Articles of Association and the executant has full powers to do so on

its behalf under the Power of Attorney dated_____ (To be incorporated by the Bank) granted to him by the proper authorities 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

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 sealed cover.