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TENDER SPECIFICATION

TENDER NO. :- VNS/RIHAND-1,2,3,6/RM&LE/11_129 DATED : 05/11/2011

FOR

RENOVATION, MODERNIZATION & LIFE EXTENSION WORKS OF UNIT NOS. 1, 2, 3 & 6 AT RIHAND HEP (6X50MW)

PART I- TECHNICAL BID

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

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

Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector – Northren Region,
Plot No. 25 , Sector - 16A ,
Distt. Gautam Budh Nagar, NOIDA – 201 301.INDIA
Phone: 0091-0120-2515410 / 2515441 / 2515449
Fax:- 091-0120-2515438 / 2515467
Email: ssr@bhelpsnr.co.in/sunitk@bhelpsnr.co.in

TENDER NO. :- VNS/RIHAND-1,2,3,6/RM&LE/11_129 DATED : 05/11/2011

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----------

Tender No. : VNS/RIHAND-1,2,3,6/RM&LE/11_129 Dated : 05/11/2011

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 – Northren Region,
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Email: ssr@bhelpsnr.co.in/sunitk@bhelpsnr.co.in

DOMESTIC NOTICE INVITING TENDER

LAST DATE OF SALE: 28.11.2011

LAST DATE OPENING: 28.11.2011

NIT NO. / NAME OF WORK
TENDER NO.:- Sealed tender are invited from the contractors fulfilling qualifying requirements for **"Renovation, Modernization & Life Extension Works of Unit Nos. 1, 2, 3 & 6 at Rihand HEP (6X50MW)"**

NOTE:-

1. Please visit our website at www.bhel.com and www.bhelpsnr.co.in for details of NIT including Qualifying requirement.
2. Tenders Not Accompanied with full Earnest Money Deposit of Rs.100000.00 By pay order or Demand Draft will not be considered. However, tenderers who have already deposited one time EMD of Rs.200000.00 with BHEL-PSNR OR ' One Time 'EMD' of Rs. 1,00,000/- with RSC, BHEL-PSNR, NOIDA are exempted from depositing EMD with this tender.

RSM/ NOIDA

ISO 9001/14001/27001,
OHSAS 18001 & SA8000

NOTICE INVITING TENDER

BHARAT HEAVY ELECTRICALS LIMITED
(A GOVT. OF INDIA UNDERTAKING)
POWER SECTOR - NORTHREN REGION,
PLOT NO. 25 , SECTOR - 16A ,
DISTT. GAUTAM BUDH NAGAR, NOIDA - 201 301.INDIA
PHONE: 91-0120-2515410 / 2516501 /2515441
FAX NO.-0120-2515438 / 2515467
EMAIL:ssr@bhelpsnr.co.in/sunitk@bhelpsnr.co.in

TO,

M/s

BY REGISTERED POST/COURIER/HAND

Ref. No. : VNS/RIHAND-1,2,3,6/RM&LE/11_129

Date: 05/11/2011

SUB: Renovation, Modernization & Life Extension Works of Unit Nos. 1, 2, 3 & 6 at Rihand HEP (6X50MW).

Dear Sir,

1. Offers, are invited as per terms and conditions enclosed and GSCC (given as General and Special conditions for Services page www.bhelpsnr.co.in at Service Tender)
2. Offer should be sent in Separate envelopes for Techno-commercial and Price bids. Offerers distinctive identification (Company name), tender No. Tender No. : VNS/RIHAND-1,2,3,6/RM&LE/11_129 dueon 28.11.2011 ' Techno-commercial' and Price bid' should be mentioned clearly on cover of each envelope. In case it is holiday on 28.11.2011 the tenders will be opened on next working day.
3. Offer should be free from overwriting. Corrections and additions, if any should be attested. The rates should be quoted for scope as per Annexure – A and in line with Annexure B&C Price quoted should be exclusive of SERVICE TAX and after considering CENVAT credit. The service tax, as legally leviable & payable by the contractor under the provisions of applicable law/act, shall be paid by BHEL as per contractor's bill. However, contractor shall have to submit proof of service tax deposited by them immediately after the deposit but not later than the next bill submitted after the due date of deposit. The contractor shall furnish proof of Service Tax registration with Central Excise Division covering the services covered under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by contractor on BHEL for this project.
4. The rates should be valid for a period of six months from the date of opening tender. The rates should be quoted both in figures and words. Please note that if there is mismatch between price given in figures and in words BHEL reserves its right to accept maximum of the two for evaluation, and minimum of the two for award and BHEL's decision in this regard should be acceptable to the party.
5. The offer should reach this office on or before 15:00 on 28.11.2011. The offer will be opened at 15:30 on same day (In case it is holiday on 28.11.2011 the tenders will be opened on next working day) in presence of such tenderers or their authorized representatives as may be present.
6. Earnest money of Rs, 1,00,000 is to be sent (in cash, Pay Order/ DD) along with the offer in favour of BHEL NOIDA Adjustment of earnest money submitted with any earlier offer will not be considered.
   However,. bidders who have already deposited "One Time 'EMD" or Rs. 1,00,000/- with SAS-Noida, BHEL-PSNR, or "One Time 'EMD)" of Rs. 2,00,000/- with SCT-Dept, PSNR., BHEL-NOIDA shall be exempted for the same against this tender.
7. The enclosed scope of work, details out the major activities only. However as per general maintenance requirement and site conditions certain related activities may have to be carried out without any extra cost.
8. BHEL reserves the right to process the tender on reverse auction basis and also the right to award the job to one or distribute the job among one or more contractors, In case it is not agreeable. the party need not quote.
9. It will be in interest of the contractor to visit site before submitting offer to have clear idea about the site conditions.

10. Time period for completion of job will be 35 MONTHS for four Units (11 Months for one UNIT) from the date of commencement of work, However in case inputs for the critical path are not provided by BHEL in time, the completion period shall be extended for the period for which the inputs are not provided. Decision of BHEL in this regard shall be final.
11. Terms of Payment:- **Payment shall be made as per Clause No.9 to 11 of Special terms and conditions attached with scope of work of this tender**. The bills will be verified by BHEL site engineer and certified *by* BHEL Resident Engineer for arranging payment. All payments are subject to Income-tax deduction at source as per Central Government laws and compliance to all statutory requirements indicating in the NIT.
    All payments shall be made through E-payment system, Contractor has to give Bank name, Branch & Account number alongwith the bills as these shall be incorporated in the system.
12. BHEL reserves the right to reject a bidder based on their unsatisfactory past performance at any other project in any centre/region.
13. BHEL is not responsible for tenders/offers lost/delayed in transit/ by post etc. The offers reaching this office after due date and time and/or without earnest money as per item no. 6 above, will not be considered. The offer should also accompany all documents as per clause no 1 of General And Special terms and conditions of contract.
14. The selected contractor will have to mobilize for the job within 10 Days of the issue of the letter of intent/ work order/work instruction from RSC.
15. Offer not received in line with the tender enquiry are liable to be rejected.
16. It is requested that only authorized representative of the tenders attend the tender opening. They should further be available on the same day for any further clarification in the matter, in the office of undersigned.
17. Successful tenderer will have to submit Security deposit as calculated below before start of work.

Order Value	SD Amount (Rs.)
Upto Rs. 10 Lakh	10%
Above Rs. 10 Lakhs and upto Rs. 50 Lakhs	Rs. 1 Lakh + 7.5% of the amount exceeding Rs. 10 Lakhs
Above Rs. 50 Lakhs	Rs. 4 Lakh + 5% of the amount exceeding Rs. 50 Lakhs

18. The contractor has to ensure that the staff/ workmen deployed for execution of work uses necessary safety appliances. Surprise checks shall be done by BHEL and in case of non-compliance of above penalty of Rs. 500/= (Five Hundred) may be imposed for each case on each occasion of surprise check
19. Contractor shall ensure use of only calibrated Inspection, Measuring & Testing equipment confirming traceability to national standards. Valid calibration certificates shall accompany these IMTEs.
20. "Code for Safety Management at Services Sites" as detailed in letter no PSNR/RSC-NOIDA/SAFETY dtd 24/12/2001 will have to be accepted by the party for qualifying in Techno-Commercial bid.
21. The contractor shall ensure compliance to all statutory requirements including but not limited to EPF deposition, Labour License, Insurance under applicable WC act & ESI failing which shall be liable for penal action as deemed by relevant act.
22. May see 'General & Special conditions of contract (GSCC)- for Services jobs" on web page www.bhelpsne.co.in at Service Tender.
23. All payments shall be made through E-payment system, Contractor has to give Bank name, Branch & Account number alongwith the bills as these shall be incorporated in the system.
24. Tentative date for start of work is 05/12/2011 However the date may change based on shutdown given by customer and this shall not entail the party to revise their price or any other condition of their offer. This factor may be kept in view while quoting.
25. Price Bid of only those parties will be opened who qualify in Techno-Commercial bid.

Thanking You,

Yours truly.

Encl.

1. Scope of work – Annexure D
2. Schedule of Rates – Annexure B & C
3. Qualifying Criteria for bidder-A

Regional service Manager (Noida)

Annexure – B

TECHNO- COMMERCIAL BID FOR :
Tender No. VNS/RIHAND-1,2,3,6/RM&LE/11_129 dated 05/11/2011

Sub:- Renovation, Modernization & Life Extension Works of Unit Nos. 1, 2, 3 & 6 at Rihand HEP (6X50MW).

NAME & ADDRESS	:	
PAN NO.	:	
PROVIDENT FUND	:	
OFFER NO.	:	
EMD	:	
VALIDITY OF OFFER	:	06 MONTHS
COMPLETION PERIOD	:	TOTAL PERIOD IS OF 35 MONTHS FOR FOUR UNITS (11 MONTHS FOR ONE UNIT)
MOBILIZATION PERIOD	:	10 DAYS
GUARANTEE PERIOD	:	01 YEAR

Following are enclosed / certified / accepted as part of Technical Bid,

1. Signed copy of NIT along with scope of work. Technical bid (annex. B) and Price bid (Annex. C) are enclosed.
2. Code for Safety Management at Services Sites as detailed in letter No. PSNR/RSC-NOIDA/SAFETY dtd 24/12/2011 safe work practices issued by PSNR are accepted.
3. Even though offer has been given for a particular unit, it is valid for any Unit of same rating in the same PowerHouse, provided there is no change in activities listed in scope of work.
4. Activity-wise percentage breakup has been indicated against each activity in the scope of work as per Annexure-'A'. in case of reduction in quantum of work at site, payment shall be released only for the activities actually carried out as per the percentage allotted.
5. All documents as required in "DOCUMENTS TO BE ATTACHED WITH BILLS" given in web page www.bhelpsnr.co.in 'Service Tender' of BHEL PSNR shall be submitted along with bills.
6. Use of all necessary safety appliances by all the staff/ workmen deployed for execution of work will be ensured. If during surprise checks done by BHEL any non-compliance is observed penalty of Rs. 500.00 (Five Hundred) may be imposed for each case on each occasion of surprise check.
7. It is certified that all statutory requirements including but not limited to payment of wages, deposition EPF, Labour License, Insurance etc governed by the provisions of applicable acts shall be our liability without any extra cost to BHEL. Further without limiting obligations and liabilities provided elsewhere in the contract, BHEL shall be kept harmless and indemnified against all claims, damages and compensations, as well as breach of such requirements. Release of progressive payments shall be subject to, inter alia, complance to such statutory requirements.
8. If there is mismatch between price given in figures and in words BHEL shall have right to accept maximum of the two for evaluation, and minimum of the two for award.
9. There are no deviations from the NIT and all Terms & Conditions of NIT including those given in " General & Special conditions of contract(GSCC)— for Services jobs" on the web page www.bhelpsnrco.in of BHEL PSNR are accepted.

Sign of Contractor :- _____

Date : Seal

Annexure - A

QUALIFYING CRITERIA

NIT No. :- VNS/RIHAND-1,2,3,6/RM&LE/11_129 **Dated : 05/11/2011**

JOB :- Renovation, Modernization & Life Extension Works of Unit Nos. 1, 2, 3 & 6 at Rihand HEP (6X50MW).

(Only Indian Bidders need to apply)

WORK EXPERIENCE :

(i) Tenderers who wish to participate should have executed following works during seven years;

(A) "Erection, testing & commissioning work of at least one vertical hydro turbine generator set of 50MW or higher"

OR

"Should be executing works of similar nature, as covered in this tender, against direct BHEL's order or to the Order of any utility in government sector for a VERTICAL HYDRO TURBINE GENERATOR SET OF 50MW or above rating."

(ii) Tenderer should also have an average annual turnover of minimum of INR 135 Lacs during preceding three years (2008-09, 2009-10, 2010-2011). Bidder shall submit audited balance sheet and profit & loss account in support of this.

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Email: ssr@bhelpsnr.co.in/sunitk@bhelpsnr.co.in

TENDER NO. : VNS/RIHAND-1, 2, 3, 6/RM&LE/11_129

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PROCEDURE FOR SUBMISSION OF SEALED TENDERS:

The tenderers must submit their tenders as required in **two parts** in separate sealed covers **prominently superscripted 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 specifications & Special terms and conditions" (Part-I) issued by BHEL shall be enclosed in **Part-I Technical Bid only**. All schedules, date sheets and details called for in the specification shall be submitted along with Technical bid. All details/Data/Schedules including offer letter duly signed and stamped are to be **submitted in duplicate**.

PRICE BID (COVER-II)

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

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

Tender No. : VNS/RIHAND-1, 2, 3, 6 /RM & LE/11_129 Dated : 05/11/2011

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DOMESTIC NOTICE INVITING TENDER

LAST DATE OF SALE: 28.11.2011

LAST DATE OPENING: 28.11.2011

NIT NO. / NAME OF WORK
TENDER NO.:-
Sealed tender are invited from the contractors fulfilling qualifying requirements for Renovation, Modernization & Life Extension Works of Unit Nos. 1, 2, 3 & 6 at Rihand HEP (6X50MW)

NOTE:-

1. Please visit our website at www.bhel.com and www.bhelpsnr.co.in for details of NIT including Qualifying requirement.
2. Tenders Not Accompanied with full Earnest Money Deposit of Rs.100000.00 By pay order or Demand Draft will not be considered. However, tenderers who have already deposited one time EMD of Rs.200000.00 with BHEL-PSNR OR ' One Time 'EMD' of Rs. 1,00,000/- with RSC, BHEL-PSNR, NOIDA are exempted from depositing EMD with this tender.

RSM/ NOIDA

SAMPLE PRICE BIDS **ANNEXURE C**

PRICE BID FOR : RENOVATION, MODERNIZATION & LIFE EXTENSION WORKS OF UNIT NOS. 1, 2, 3 & 6 AT RIHAND HEP (6X50MW)

TENDER NO. VNS/RIHAND-1, 2, 3, 6 /RM & LE/11_129

Sub: Renovation, Modernization & Life Extension Works of Unit Nos. 1, 2, 3 & 6 at Rihand HEP (6X50MW).

NAME & ADDRESS	:	
OFFER NO.	:	
OFFER DATE	:	

The price quoted should be inclusive all levies and TDS applicable shall be deducted as per law in force at the time of payment.

1.	**Lumpsum (LS) price for the entire scope of work as per Annexure-A (inclusive of all consumables, input materials and supervision)**	Amount in Figure) Rs. (Amount in Words) Rupees
2.	**Extra work rate on per man-hour basis (inclusive of supervision, T&P, consumables and all other costs)**	Rs. 60.00 only

Sign of Contractor:

_____

Date:

Seal

Scope of Work

Annexure –D

Tender No._____

Date: __.__.2011

SUB: Renovation, Modernization & Life Extension Works Of Unit nos. 1, 2, 3 & 6 At Rihand HEP (6x50MW)

Rihand HEP is equipped with six vertical Francis hydro units of 50MW each. This project is located in District Sonebadhra in UP and is about 165 Kms away from Varanasi and 150 Kms. from Mirzapur. The nearest railway head for the project is Renukoot, which is about 10 Kms. from the project.

All the six generating sets have been designed, erected and commissioned by M/s English Electric Co., England in sixties. Six units are being fed by means of separate penstocks that draw the water from the Rihand Dam Reservoir.

All the six units were envisaged to be renovated, modernized and up rated from the original capacity of 50MW to 55MW. The work of one Unit (Unit No.5) has been completed and one Unit (Unit No. 4) is ongoing. The work of balance four Units have to be taken up. This work involves following:

Sl. No.	Description	% Age Allotted (Per Unit)	Total % Age Allotted (For 4 Units)
PART-I Mechanical Package			
PART-II Electrical & C&I Package			
Mechanical Package			
A)	**Dismantling of complete unit & transportation of certain identified assemblies to Bhopal (List attached in annexure-II).**	**2.5**	**10**
B)	**Storage, Receipt, Preservation and Transportation of Materials**		
b.1	**Development of a site store and office.**	**1.5**	**6**
b.2	**Assistance to UPJVNL in Receipt, Storage, Preservation & Conservation of all the equipment received from BHEL, Bhopal at site.**	**0.5**	**2**

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b.3	Transportation to and fro from UPJVNL store & site.	0.5	2
C)	Overhauling and Repair of water conductor system		
c.1	Overhauling / Repair of expansion joint	0.5	2
c.2	Overhauling / Repair of Draft tube	0.25	1
c.3	Overhauling / Repair of Spiral Casing assembly and Stay Ring assembly	0.25	1
D)	Repair/ Overhauling/ Refurbishment of Turbine components at site.		
d.1	Repair of Pivot Ring assembly and Vacuum Breaking Valves:	0.375	1.5
d.2	Installation of Turbine runner	0.375	1.5
d.3	Repair and assembly of Turbine Top Cover and assembly of Guide Vanes including lever, dowels etc.	0.75	3
d.4	Assembly of Guide Vane Bearing Bodies	0.25	1
d.5	Overhauling /Repair of Guide Vanes Servo Motor, Regulating Ring and Oil Pressure System	0.375	1.5
d.6	Installation of shaft seal and shaft sleeve assembly	0.375	1.5
d.7	Assembly of Turbine Guide Bearing System including its piping	0.25	1
E)	Overhauling, Repair and assembly of Generator components		
e.1	Repair of Stator Frame	0.5	2
e.2	Core Building including assistance in core flux test	0.75	3
e.3	Rewinding work of stator including assistance in HV Test	0.75	3
e.4	Repair of Rotor rim assembly	0.25	1
e.5	Installation of Poles including assistance in various test	0.5	2
e.6	Installation of Lower Bracket, H.S. Lube oil system and assembly of Generator Guide and Thrust pads and Thrust Collar/ Mirror Disc assembly	0.5	2
e.7	Installation of Stator Air Coolers and cooling system	0.5	2
e.8	Installation of Upper Bracket, including replacement of wooden packing by iron packing	0.25	1
e.9	Assembly of Brush Gear & slip ring	0.25	1
F)	Valves and Piping		
f.1	Generator bearing oil cooler and mounting of flow relay	0.25	1
f.2	Transformer cooling line piping and Piping work of Governor	0.375	1.5

Abhinav Madaria

f.3	Vapor seal assembly and associated piping vapor seal	0.375	1.5
f.4	Replacement/ Overhauling of Main cooling Valve, Spring Loaded valve and weight valve & Installation of Duplex Strainer	0.5	2
f.5	Replacement / Overhauling of Draft Tube drain valve and Penstock drain valve	0.5	2
G)	Re-assembly, alignment, centering, leveling, load sharing of machine and final boxing up of machine.	2.5	10
H)	Assistance rendered in successful re-commissioning & PG Test of the unit including vibration analysis & balancing.	2.5	10
	PART-II C&I Package		
ii.1	Dismantling of Old Fire Fighting & assembly, erection and commissioning of fire fighting system.	0.25	1
ii.2	Dismantling of old heaters and erection of new heaters cabling and termination.	0.25	1
ii.3	Installation of HP system associated piping and commissioning.	0.375	1.5
ii.4	Dismantling of old B&Js and installation of new BJs associated cabling and termination and commissioning of the new BJ panel	0.375	1.5
ii.5	Dismantling of Old CTs & PTs and assembly of new CT, PT, Surge arrestors and associated cabling and termination	0.75	3
ii.6	Dismantling of Old Thermostats, RTDS & DTTS.	0.25	1
ii.7	Dismantling of Old Excitation system, LAVT, NG Cubicle, Governor System, control panel & assembly, erection & commissioning of Excitation system, LAVT & NG cubicle, associated cabling & termination.	0.75	3
ii.8	Painting of Bus duct including testing of insulators and replacement if any.	0.75	3
ii.9	Dismantling of old governing system & Assembly ,erection and commissioning of Governing system, associated cabling and termination	0.75	3
ii.10	Modification of the control room, associated panel work and wiring of flow relay.	0.25	1
ii.11	Installation, mounting cabling and termination of the speed probe.	0.25	1
	TOTAL	25	100

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Dismantling of units, transportation of dismantled components/ assemblies identified for repair at BHEL, Bhopal plant, repair of certain assemblies/ components at site, rebuilding of generator stator core, rewinding of generator, erection of governing and excitation systems, re-assembly & re-commissioning of the units. Major equipment and spares are being supplied by BHEL, Bhopal & Bangalore units.

Two units are being undertaken for renovation simultaneously for which the Brief scope of work comprises of the following major works of each machine has been reproduced below:
Note: % Mentioned above is per unit

Detailed scope of work alongwith its special conditions for the respective works is given on the sub-sequent pages.

A. Dismantling of complete unit & transportation of certain identified assemblies to Bhopal:

The job includes **dismantling of the complete machine** and safe storage of all the dismantled components and transportation of certain identified assemblies/ components from Rihand HEP to BHEL, Bhopal plant.

All parts should be properly match marked before dismantling. The machine shall be handed over to sub-contractor after de-watering of machine by the UPJVNL.
Packing, Loading & Transportation of various dismantled components/ assemblies envisaged to be repaired at BHEL plant from Rihand site to BHEL, Bhopal shall be carried out by subcontractor. The assemblies earmarked for repair at Bhopal plant include Francis Runner assembly, Thrust Bearing, Generator Guide Bearing & Turbine Guide Bearing pads, a set of Guide Vanes, Guide Vane Levers, Old dismantled Generator Stator winding coils, Dismantled Generator Stator core punching, all the 40 No. Generator Rotor pole shoes & winding, etc. However, **transit insurance of the packages, being transported by subcontractor, shall be arranged by BHEL.**
All the dismantled components that are not envisaged to be used back in the unit are required to be stored properly till the completion of work in both the units.
Notes:

1. All dismantled parts shall be thoroughly cleaned and surface dried with the help of clean cloth and will be stored safely having proper

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tagging. All machined surfaces of parts shall be applied with rust preventives like rustoline, grease of Indian Oil or Hindustan Petroleum and other preservatives on various electrical components. These preservatives shall be arranged by the contractor at his own cost.

2. All preserved parts shall be double wrapped in paraffin paper & shall be kept in dry place. Paraffin paper shall be arranged by the contractor at his own cost.
3. All pipes shall be closed & ends shall be blanked properly.
4. All nuts bolts studs & dowels shall be cleaned, applied grease and kept in polythene packs with proper tagging/ bin cards.
5. All small components shall be stored in covered boxes and shall be properly tag marked (using metallic tags) with name of item. Responsibility for arrangement of wooden boxes as required shall be of the contractor at his own cost.
6. Thrust bearings pads, guide bearing pads and mirror disc shall be cleaned very carefully and kept at suitable place duly greased and wrapped in paraffin paper.
7. All old rubber parts taken out during dismantling shall be properly tag marked and kept safely to have proper dimensions for arrangement of new ones in future.
8. All consumables like old dhoties, markeen cloth, kerosene oil, petrol, diesel, jute, grease and other preservatives shall be arranged by the contractor at his own cost.
9. All measurements like levels & clearances shall be recorded at each stage of dismantling of machines as per directions of BHEL Engineer.
10. All consumables for grinding & welding required shall be arranged by the sub-contractor at his own cost.
11. All material required for platform shall be arranged by the sub-contractor at his own cost.
12. Welding generators, grinders, cutters etc. shall be arranged by the sub-contractor at his own cost.
13. Erection devices, special T&P etc. as available with UPJVNL shall be supplied free of cost. However special spanners, slings, required for the job but not available with UPJVNL in usable conditions shall be arranged by the contractor at his own cost. In case of any damage during dismantling to devices, T&P etc. provided by UPJVNL free of cost to the sub-contractor, sub-contractor will have to bear the replacement/ repair cost.
14. Chain pulley blocks, jacks, pull lift machines, D-shackles and general T&P shall be arranged by the sub-contractor at his own cost with due

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test certificates.

15. All dismantled equipment shall be stored on the wooden planks and preserved properly.
16. Extreme care shall be taken while using the preservatives or inflammables and all safety rules should be observed while lifting/lowering the heavy equipment/material. All safety rules in respect of handling of equipment of material is also to be observed.
17. If any other part required to be dismantled for complete & successful dismantling of m/c the same shall be done by the contractor within the scope of this work.
18. Any component if damaged during dismantling due to negligence of contractor shall be replaced by the contractor at the time of assembly at his own cost. Such components should be of best quality manufactured as per the BHEL drawing.
19. Any petty works required to be carried in-hand to BHEL RSC, Varanasi or BHOPAL

B. Development of a site store and office.

Assistance to UPJVNL in Receipt, Storage, Preservation & Conservation of all the equipment received from BHEL, Bhopal at site including transportation to and fro from UPJVNL store & site.

Various new as well as repaired assemblies, spares, components as received from BHEL, Bhopal plant shall have to be received, stored properly and suitably preserved by subcontractor at site.

Storage & Preservation shall have to be carried out by subcontractor as per the guide lines issued by BHEL.

This activity involves preparation of all types of storage areas viz open, semi closed and closed. Levelling of the Ground, Fencing, Building of walls and roofs with corrugated galvanized sheets required to be carried out by subcontractor. Also, the subcontractor shall make the provision of Tarpaulins, bulk waterproof covering materials, wooden sleepers etc. for this work. Any pipelines received from units shall be cleaned thoroughly, painted with red-oxide and stored. After utilization of the pipes they shall again be coated with two layers of epilex paint with proper color coding. There should be sufficient time for drying before each coat being applied.

All the arrangements for lighting in the storage areas and their security

arrangement on round the clock basis shall be made by subcontractor. A security guard should be present round the clock basis on site.

C. Overhauling and Repair of water conductor system

The overhauling and repair of the water conducting system comprises of the following activities

C.1 Overhauling / Repair of expansion joint

Overhauling of Penstock Expansion Joint. Graphite sealing for expansion joint shall be supplied by sub-contractor.

The studs of the expansion joint shall be replaced by new studs which shall be in the scope of the subcontractor.

The old studs are to be removed and handed over to UPJVNL.

C.2 Overhauling / Repair of Draft tube

Along with thickness survey, all the weld joints of draft tube shall be checked. Thickness survey and Die-penetration test of all the welding joints shall be carried out for any crack in welding joints. Wherever found welding shall be done with suitable electrodes to be supplied by subcontractor. All materials/ consumables shall be arranged by sub-contractor free of cost.

C.3 Overhauling / Repair of Spiral Casing assembly and Stay Ring assembly

Spiral casing and all the stay vanes shall be cleaned properly with wire brush. All the cavities found shall be weld build by supertherm electrode (Electrodes to be arranged by subcontractor). Thereafter, grinding and D.P. test shall be carried out. The stay vanes and spiral casing shall be epoxy painted as per technical conditions of BHEL. All materials/ consumables shall be arranged by sub-contractor free of cost. Epoxy paint shall be arranged by subcontractor at site.

D. Repair/ Overhauling/ Refurbishment of Turbine components at site:

Various activities involved in the repair, overhauling & refurbishment of turbine components/ assemblies are briefly mentioned below:

- The subcontractor has to arrange for an Ex-BHEL/Expert on time to

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time basis for the below assembly works.

D.1 Repair of Pivot Ring assembly and Vacuum Breaking Valves:

1. Holes for bushes in the Pivot ring assembly as well as top cover assembly and eroded portions in the liners shall be duly welded and ground to achieve original surface, circularity and co-axiality of top cover holes to be maintained.
2. All the pivot ring bushes shall be taken out and new bushes as per the requirement of self lubricating system shall be provided by BHEL. These bushes shall be matched with guide vanes and the corresponding holes of pivot ring assembly.
3. Joints of pivot ring and stay ring to be filled up after making 'V' groove with electrode of 316 grade. It shall be grinded to get finished surface. All the requisite welding electrodes shall be supplied by subcontractor.
4. Weld build up of eroded surface of top cover and pivot ring will be done after preheating of the job at 150^{O}C. All care shall be taken to avoid any distortion of job.
5. Installation of new triangular seal in the guide vanes. A set of new triangular seal shall be supplied by BHEL, Bhopal. Required drilling should be carried out by the subcontractor for fixing the seals.
6. Replacement of pipelines from top cover assembly to pressure gauge in turbine pit. A set of pressure gauges shall be supplied by BHEL, Bhopal. However new pipelines shall be supplied at site by subcontractor.
7. Repairing of two nos. Vacuum Breaking Valve. All materials & consumables required for the job shall be provided by subcontractor free of cost.
8. Painting of all repaired assemblies as per specific instructions. Paints shall be provided by subcontractor free of cost.
9. Co-axiality of Top Cover & Pivot Ring holes to be maintained.
10. Height between Top Cover & Pivot Ring Liner to be maintained to allow the free movement of guide vanes while erection.

D.2 Installation of Turbine runner:

The Turbine runner shall be repaired by BHEL Bhopal and sent to the site For assembly and installation. The following jobs shall be in the scope of the contractor:

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1. Cleaning and painting of the runner from Inside and outside.
2. Blue matching of the keys with the runner as well as machining of the keys to the tune of 2mm all through out if required.
3. Coupling and mounting of the shaft with the runner.
4. Locking of the coupling bolts , tightening and stretching if required.
5. Assembly of the cone with the runner and its proper locking.
6. Lowering of the runner and maintenance of the labyrinth clearance

D.3 Repair and assembly of Turbine Top Cover and assembly of Guide Vanes, bearing bodies, including lever, dowels etc.

The top cover is to be thoroughly cleaned and sand blasting is to be done.
The labyrinth should be thoroughly cleaned.
The top cover is to be assembled and the parting plane should be properly tightened and welded to avoid any leakage.
The bedding surface of the bearing bodies should be properly blue matched and dowelling should be done.
Any reaming and honing required should be done by the contractor.
The guide vanes should be assembled and free movement should be ensured.
All weld joints of bearing housings to be checked for any crack by dye-penetrating testing and cracks shall be de-gauged, welded with superatherm D&H make electrodes to be supplied by sub-contractor and dye-penetration test shall be done after each route run of welding and after final welding and grinding. The contractor at his own cost shall arrange all welding and grinding material.
Rubber seals shall be replaced by new ones by subcontractor. Any required reaming, chipping for the bodies to be fitted to the guide vanes shall be carried out by the subcontractor.

D.4 Assembly of Guide Vane Bearing Bodies

1. Bearing Bodies assembly and bushes to be rechecked and installed for free movement of guide vanes and also to ensure zero leakage through bearing bodies and bushes i.e. proper pressing of seals is to be ensured while installation.

D.5 Overhauling /Repair of Guide Vanes Servo Motor, Regulating Ring and Oil Pressure System.

1. Dismantling of pistons and non-return valves.
2. Servo motor cylinder shall be repaired to remove pitting, taper & ovality. All oil piston rings shall be replaced. New piston rings shall

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be supplied by BHEL.

3. Lapping of NRV's for no leakage of oil.
4. Filling of oil in servomotor and remove air bubbles from the system.
5. Assembly of the servomotor and regulating ring assemblies.
6. Painting of servomotor and regulating ring including piston rod shall be done by enamel paint. Enamel paint shall be provided by subcontractor free of cost.
7. Thorough cleaning of Oil pressure units and pressure receiver tank and painting inside with oil resistant paint. All paints shall be provided by subcontractor free of cost.
8. All Gun Metal Bushes are to be replaced with new ones. All bushes shall be provided by BHEL.
9. Inner portion of housing shall be painted by oil resistant paint.

D.6 Installation of shaft seal and shaft sleeve assembly

Modified shaft sealing system shall be provided in the machine in place of present conventional type shaft sealing (in two parts), carbon segment and spring etc. New components for shaft sealing system shall be provided by BHEL.

1. The modified shaft sealing system shall involve replacement of carbon segments with neoprene rubber sealing system. It shall comprise the following:
   - Installation of new shaft seal in two parts of the dimensions of the existing shaft seal of the material Chromium - Nickel steel.
   - The necessary fixing arrangement for rubber seal, being supplied by BHEL, shall also be erected by the subcontractor.

New shaft sleeve is to be attached to the shaft, the shaft sleeve shall be provided by BHEL.

- Installation of the shaft sleeve is to be done by cutting the sleeve in two pieces,
- Mounting the pieces on the shaft and no gap should be there between the shaft and the sleeve.
- Welding is to be done on the two parts and quality and testing of the welding is to be ensured through UT ad DPT.

D.7 Assembly of Turbine Guide Bearing System including its piping

1. Bearing housing of Turbine Guide Bearing shall be cleaned properly to remove oil, dust; grease etc. and all welding joints shall be checked

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by dye-penetration test. Detected cracks shall be re-gauged, welded with electrode again retested by DP test.

2. All supporting trays of turbine guide bearing shall be removed and pad support be cleaned properly.
3. Replacements of all Perspex sheets.
4. Cleaning of housing and inner tank along with pipeline.
5. All oil coolers window studs shall be replaced.
6. All the required pipelines should be thoroughly cleaned through acid for removal of sludge.
7. All the pipelines should be painted with two coats of proper paint. Proper time should be allowed for drying before second coating is applied

All the studs & Perspex sheets shall be supplied by BHEL

E. Repair/ Overhauling/ Refurbishment of Generator components at site:

Various activities involved in the repair, overhauling & refurbishment of turbine components/ assemblies are briefly mentioned below:

- The subcontractor has to arrange for an Ex-BHEL/ Generator Expert on time to time basis for the below assembly/repair works.

E.1 Repair of Stator Frame.

1. The subcontractor has to carry out all the reading, radial as well as diametrically to determine the position of the frame w.r.t centerline.
2. The subcontractor has to remove all the 4 parts of the frame and reposition it to reduce bar to bar distance ovality.
3. The stator frame consists of 4 parts, each part consisting of 18 key bars and 4 dowels. All the fasteners have to be removed along with the dowels and the frame has to be repositioned as per the requirement.
4. Any key bar removal if required has to be done for adjustment. Any variance has to be adjusted with the provision of shims if required
5. Any nut damaged during removal or found unusable, dowels etc have to be suitably replaced with new ones.
6. Lower pressing flange has to be suitably modified for fitting of the fingers and for readiness of core building

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E.2 Core Building including assistance in core flux test

Activities involved are as under:

i) Removal of old core punching from the generator stator core.
ii) Repair of generator stator frame body after carrying out the NDT test of frame.
iii) Repair in the frame for any type of ovality, mismatch or required maintenance of diameter. Repair of the bottom pressing ring for preparation of the finger positioning and welding if required.
iv) Checking up of Stator Foundation by DP test and attend to the abnormalities as required.
v) Re-building of generator stator core assembly using a set of new core punchings being supplied by BHEL.
vi) Carrying out the core flux testing. All the testing equipment including 3phase/2 phase 1 MVA transformer shall be arranged by subcontractor free of cost. However Low-Power Factor wattmeter shall be arranged by BHEL.

E.3 Rewinding of stator including assistance in HV Test

Activities involved are as under:

i) Removal of old coils from the generator stator assembly. Care shall be taken to remove the coils safely so that they could be used, in case required.
ii) Rewinding of the complete generator with new coils/ bars being supplied by BHEL. All the loose insulation material required for this work shall be supplied by BHEL.
iii) Carrying out the stage testing of the new winding.
iv) Carrying out the Drying out of rewound generator.
v) Carrying out the Final HV Test of all the three winding phases of generator.
vi) Measurement of DC Resistance of all the three phases of winding.
vii) Assistance to be rendered for carrying out the 'Surge Comparison Test'. Test equipment shall be arranged by BHEL.
viii) Assembly of Anti Condensation Heaters in the generator barrel. New Heaters alongwith Thermostat and cables shall be supplied by BHEL.
ix) HV test kit, Rectiformer shall be provided by BHEL. However subcontractor has to arrange for the transport with insurance for transportation of these equipment from a operating BHEL site to site and back. However final HV test for the finished stator has to be carried out by the subcontractor.

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E.4 Repair of Rotor rim assembly

i) Thorough cleaning of Generator Rotor Rim and Spider assembly.
ii) D.P. Testing of Rotor Fan-Arm Cover Plates, Air Ducts and Buffer Plates and if required, repair of the same using new fasteners.
iii) Retightening of the fasteners and proper locking of the nuts by tack welding.

E.5 Installation of Poles including assistance in various test

Activities involved are as under:

iv) Dismantling of all the rotor poles from the rotor rim assembly after de-soldering. All the pole iron body and field coils are required to be transported to BHEL, Bhopal plant for re-insulation with Class-F insulation.
v) Re-assembly of all repaired Rotor Poles on the Generator Rotor Rim assembly after inserting Class-F insulated coils on the individual pole shoes.
vi) Brazing of adjacent rotor pole assemblies. Brazing material shall be provided by BHEL.
vii) Re-insulation of Rotor Current carrying leads with Class-F insulation. Loose insulation material shall be supplied by BHEL.
viii) D.P. Testing of Rotor Spider, Rim assembly, Upper Bracket/Lower Bracket assemblies and if required, repair of the same.
ix) Carrying out all the stage electrical testings viz IR, Impedance measurement, HV testing, etc.
x) Carrying out the DC resistance test of each rotor pole and the combined rotor after pole insulation.

E.6 Installation of Lower Bracket, H.S. Lube oil system and assembly of Generator Guide and Thrust pads and Thrust Collar/ Mirror Disc assembly

i) All the discs under thrust pads are be cleaned properly and kept safely after applying Mobelex grease no.2.
ii) Bearing housing of all the bearing shall be cleaned properly to remove oil, dust; grease etc. and all welding joints shall be checked by dye-penetration test. Detected cracks shall be re-gauged, welded with electrode again and retested by DP test.
iii) Replacement of all Perspex sheets being supplied by BHEL.
iv) All the thrust bolts and studs to be replaced. New supply shall be made by BHEL.
v) Cleaning of housing and inner tank alongwith pipeline.

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vi) All oil coolers window studs shall be replaced. Studs shall be supplied by BHEL.

vii) Mirror surfaces shall be cleaned with spirit and then air dried and apply a continuous layer of mobilex grease by means of spatula. Thereafter shall be covered the surface with paraffin paper strips with over lapping at edges and smoothened to remove air bubbles.

viii) The thrust collar of Generator shaft be cleaned with the help of fine stone to make the surface spot free and preserve the same by applying above mentioned method.

E.7 Installation of Stator Air Coolers and cooling system.

1. Old pipeline and 16Nos flanged type gate valve suitable for 90mm (OD) installed in generator barrel shall be replaced with new ones being supplied by BHEL.
2. Also, 2 valves with pipe size of 90mm diameter, being supplied by BHEL, for Generator Thrust and Generator Guide Bearing shall be replaced.
3. The existing 2 way valve is to be replaced by new 4 single way valves and the piping is to be suitably modified.
4. All gaskets have to be replaced and shall be supplied by the sub-contractor.
5. The new air coolers shall be hydraulically tested at 6 kg/cm^2 for 30 minutes.
6. All packing, felt required for assembly to be replaced shall be supplied by subcontractor.
7. The pipelines should be suitably modified and laid for the cooling system. All the weld joints should be properly tested by UT and DPT.

E.8 Installation of Upper Bracket, including replacement of wooden packing by iron packing.

1. The Upper bracket sealing system is to be modified by mounting of iron packing and its sealing by ms plates.
2. The iron packing's should be grinded/machined for proper fitting
3. The plates are to be welded over the UB by gas welding/argon welding.
4. The modified assembly is then to be assembled.

E.9 Assembly of Brush Gear & slip ring

1. Slip rings shall be repaired and its surface shall be smoothened by oil stone/machining.

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2. All supporting glass texolite make spacers, insulators spacer tube dowel pins, carbon brush of grade EGO of Assam carbon make & Carbon Brush holders being supplied by BHEL shall be replaced.
3. After proper cleaning, insulation paint (Becktol red of Dr. Beck make) shall be used for improving the slip ring insulation level. Any damaged slip rings shall be replaced by new one which in that case shall be supplied by BHEL.
4. New brush gear assembly is being provided by BHEL, the assembly is to be suitably mounted. Before mounting IR should be checked and ensured.
5. All the brushes should be fixed , brushes shall be provided by BHEL.

F.1 Generator bearing oil cooler and mounting of flow relay.

1. After dismantling of coolers, inner surface shall be thoroughly cleaned and painted with oil resistant paint outer surface with enamel paint.
2. Cooling tube assembly supplied by the UPJVNL shall be fitted and complete assembly shall be tested at the 6kg/cm square.
3. All fastener and packing, to be replaced shall be supplied by subcontractor. Overhauling of oil and water relays shall be carried out and micro switch, to be supplied by subcontractor, shall be replaced.
4. All materials/ consumables other than cooling tubes shall be supplied by subcontractor free of cost.
5. Two Relays have to be dismantled and new flow relays to be installed, required modification in piping is to be carried out by the sub-contractor.

F.2 Transformer cooling line piping and Piping work of Governor

1. Existing pipe line from the main cooling line to the transformer is to be dismantled.
2. The line has to be replaced by new pipeline and bends.
3. The finished pipelines should be painted with two coats of proper paint, with proper timing between each coat.
4. The main distribution valve for the governing system is to be dismantled.
5. The existing pipelines from the valve to the servomotor has to be removed.
6. New HMC has to be installed, grouted and positioned.
7. The required pipings are to be suitably modified with new pipelines for opening, closing, drain and supply system.
8. All the joints in the piplines have to be tested by DPT and UT.
9. All pipelines should be painted with two coats of paint with proper timing between each coat.

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F.3 Vapor seal assembly and associated piping vapor seal

Presently aluminium seal is provided to arrest oil vapours from thrust and generator guide bearing chamber.
As per latest technology it shall be replaced with fibre glass enclosing rubber cord of labyrinth design. The new Vapour Seal assembly shall be supplied by BHEL.
Any required changing in piping system shall have to be made by the subcontractor.
Pipes and connectors shall be supplied by BHEL.

F.4 Replacement/ Overhauling of Main cooling Valve, Spring Loaded valve and weight valve & Installation of Duplex Strainer.

1. The following valves have to be dismantled, serviced and reinstalled.
2. Blue matching and lapping has to carried out.
3. The consumables for lapping and glands for the valves shall have to be supplied by the sub-contractor.
4. Old Duplex strainer installed in the main cooling line has to be dismantled and new strainer is to be installed in its place.
5. The pipeline and existing foundation is to be suitably modified and required civil work for the assembly of the strainer have to be done by the sub-contractor

F.5 Replacement / Overhauling of Draft Tube drain valve and Penstock drain valve

The old draft tube drain valve and penstock drain valve has to be dismantled, lapped, serviced and assembled in their position. Required consumables for servicing, consumables, glands, gaskets shall have to be arranged by the sub-contractor.

G. Re-assembly, alignment, centering, leveling, load sharing of machine and final boxing up of machine

After completions of various repair/overhauling, the subjected work shall be carried out under the supervision of BHEL Engineer of contract. The measurement shall be recorded at each stage exclusively as per the Norms. The main activities are given below however the actual erection shall be done as per direction of Engineer-in-charge.

1. Lowering of all the 24nos guide vanes in pivot ring & ensure their free movement in pivot ring bushes. Lower only top cover and bearing

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bodies to ensure free movement of guide vanes and its rectification if required.

2. Final lowering of 24nos guide vanes with cup seals & SS ring etc. The contractor at his own cost shall arrange the cup seals & other consumables required.
3. Lowering of runner along with shaft and then lowering of top cover.
4. Lowering Guide vanes bearing bodies after fixing proper 'O' rings, cup seals and their tightening. All the studs to be changed by new SS studs (shall be arranged by BHEL).
5. Lowering of regulating rings servomotors with guide vane limit and their tightening,
6. Fixing of guide vanes levers, connecting links with pins & cover etc.
7. Fixing of Greasing systems along with all necessary parts.
8. Fixing of governor oil pipeline of servomotor, lowering of Lower brackets & fixing the thrust and Guide pads.
9. Fixing of new braking system with pipe line
10. Connecting all oil pipeline of lubricating system to lower bracket.
11. Lowering of generator shaft, replacement of the 'O-ring in coupling flange (To be arranged by BHEL).
12. Lowering of upper bracket and its fixing after proper centring.
13. Blue matching of thrust and Guide pads with the rotor shaft.
14. After proper blue matching (i.e.100%) then level the shaft.
15. Lower the rotor assembly with main shaft.
16. Fix the new RTD and TSD for bearings pads along with new cable and other accessories eight no. each (provided by BHEL).
17. Level the rotor & maintain the air gap as per the instruct6ion of Engineer-in-charge.
18. Levelling of rotor and alignment of generator shaft as per procedure decided by Engineer-in-charge. Plunger type dial gauge having least count 0.01 mm of Mitotoyo make and heavy duty magnetic stand (8nos each) shall be arranged by the contactor at his own cost. This shall be used for alignment of all the machines, thereafter; these shall become property of UPJVNL at no extra cost.
19. Final levelling of rotor and alignment of generator shaft as per direction of Engineer-in-charge. The shims required are to be arranged by contractor at his own cost.
20. Load sharing of thrust pads.
21. Cover the machine with baffle plates & chequer plates etc of rotor after lowering the upper bracket.
22. Fixing of shaft gland sealing
23. Replacement of old wooden packings rings which are in segments and fixed between upper stator surface to upper baffle plates to prevent cooled air by M.S. channels as per site requirement.
24. Installation of new tubular shaft for accommodating slip rings, S.S.gear & OSD.

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25. Installation of Temperature Recorders, Oil and Water Flow Relays as supplied by BHEL.
26. Filling of oil in bearing oil sump & receiver etc.
27. Dismantling of platform from draft tube. Closing of draft tube window after proper packing. Checking of proper closing of draft tube drain valve. Closing of spiral manhole after replacing gaskets.
28. Spinning dry-out and commissioning of machine as per procedure/directions of authorized representative of Engineer-in-charge of the work.

H. Assistance rendered in successful re-commissioning & PG Test of the unit including vibration analysis & balancing.

C&I Package

11.1 Dismantling of Old Fire Fighting & assembly, erection and commissioning of fire fighting system.

Replacement of the existing fire protection of the generators by new one being supplied by BHEL.
The new piping and routing of the co2 system and its required pneumatic testing.
Mounting and erection of the new co2 panel, minor civil works required, associated cabling termination and assistance in commissioning of the panel.

ii.2 Dismantling of old heaters and erection of new heaters cabling and termination.
Disantling of old heaters, removal of cables and associated syetsm.
Erection, Testing & Commissioning of Anti Condensation heaters Required cabling , termination and piping of the system.
Required termination, cabling ferruling and tagging is in the scope of the contractor.
The cables should be properly dressed, tagged and terminated. Associated glands, tags and ferrules should be supplied by the sub contractor.

ii.3 Installation of HP system associated piping and commissioning.

Erection, Testing & Commissioning of High Pressure Lubricating Oil system complete in all respects. HP Lubrication system shall be supplied by BHEL Associated piping and their testing, finishing with required paint is in the scope of the subcontractor.

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Required termination, cabling ferruling and tagging is in the scope of the contractor.
The cables should be properly dressed, tagged and terminated. Associated glands, tags and ferrules should be supplied by the sub contractor.

ii.4 Dismantling of old B&Js and installation of new BJs associated cabling and termination and commissioning of the new BJ panel

Existing brake system shall be replaced by new one, which shall consist of jacks, pipeline, limit switches, control cables, braking pads etc. The new braking system shall be supplied by BHEL.
Required termination, cabling ferruling and tagging is in the scope of the contractor.
The cables should be properly dressed, tagged and terminated. Associated glands, tags and ferrules should be supplied by the sub contractor.

ii.5 Dismantling of Old CTs & PTs and assembly of new CT, PT, Surge arrestors and associated cabling and termination & installation of various Current Transformers suitable for 60MW machine:

i) Below mentioned Current Transformers (Indoor Type) will be mounted on the stator out going connections. Three cores per phase of above C.T's will be maintained in a single frame.

- CURRENT TRANSFORMER RATIO 4000/5 A, 3NOS FOR TRANSFORMER DIFFERENTIAL PROTECTION.
- C.T RATIO 4000/5 A, 3 NOS FOR GEN DIFFERENTIAL PROTECTION.
- C.T.RATIO 4000/5A, 3NOS FOR GENERATOR OVER CURRENT PROTECTION.
- C.T.RATIO 4000/5A,3NOS FOR GENERATOR DIFFERENTIAL PROTECTION.

ii) Below mentioned Current Transformers (Indoor Type) will be mounted on the Generator Neutral connections. Three cores per phase of above C.T's will be maintained in a single frame.

- C.T. RATIO 4000/5A, CLASS 0.2, 2NOS FOR METERING.
- C.T. RATIO 4000/5A, CLASS 0.2, 3NOS FOR SUMMATION METERING.
- C.T. RATIO 2000/5A, 6NOS FOR TRANSVERSE DIFFERENTIAL PROTECTION FOR GENERATOR.

- C.T. RATIO 4000/5A, 3 NOS. FOR GENERATOR DIFFERENTIAL PROTECTION.

iii) Below mentioned Current Transformer will be mounted on the Unit Transformer T-Off connection.

- C.T. RATIO 30/1A, 3NOS CLASS 5U 10 FOR UNIT TRANSFORMER OVER CURRENT PROTECTION.

iv) Replacement of existing old capacitators & surge diverters being supplied by BHEL.

v) Replacement of cable between neutral sides of stator to earthing transformer with new ones being supplied by BHEL.

vi) Required termination, cabling ferruling and tagging is in the scope of the contractor.

vii) The cables should be properly dressed, tagged and terminated. Associated glands, tags and ferrules should be supplied by the sub contractor.

All the above mentioned CT's and associated wiring shall be provided by BHEL.

ii.6 Dismantling of Old Thermostats, RTDS & DTTS.

ii.7 Dismantling of Old Excitation system, LAVT, NG Cubicle, Governor System, control panel & assembly, erection and commissioning of Excitation system, LAVT & NG cubicle, associated cabling and termination.

i) Dismantling of old excitation system and keeping it at store.

ii) Completing all the civil works involved in the erection/installation of system.

iii) Erection of complete SEE including equipment viz Excitation Transformer, Field Breaker Control/Alarm Panels and necessary tapping from GT Connections etc as per design/supply.

iv) Installation of all auxiliaries' protection devices like CT's, PT's, and Relays etc. required to protect the supplied equipments.

v) Instrument Transformers (alongwith required control cables) necessary for protection and stability of the GT Differential/Generator Differential Protection are also to be installed.

vi) Cabling of power and control cables and fixing of instruments as required.

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vii) All required cables from Tee-Off of GT connections up to the slip rings of the machines including power and control cables to connect LT Panels, DC Boards, Control/Relay Panels and other equipment to be laid out. Cables shall be supplied by BHEL.

viii) Assistance to be rendered for Testing and commissioning of the Static Excitation system.

All the old equipment of Generator Neutral Earthing & Surge Protection shall be replaced by new one, being supplied by BHEL, after dismantling the old ones. These equipment include:

1. Neutral Earthing Equipment
2. Generator Surge Protection Equipment

ix) All the equipment including SEE, cables, protection devices, etc. shall be provided by BHEL.

x) Required termination, cabling ferruling and tagging is in the scope of the contractor.

xi) The cables should be properly dressed, tagged and terminated. Associated glands, tags and ferrules should be supplied by the sub contractor.

xii) HT electrician for cabling of power cable from busduct to excitation transformer will have to be arranged by the contractor.

ii.8 Painting of Bus duct including testing of insulators and replacement of all insulator supports.

Activities involved are as under:

1. Dismantling of all front cover plates of 11KV Bus Duct.
2. Dismantling of all copper bus plates from phase terminal of Stator to LV Bushing of Generating Transformer, completely along with dismantling of all old insulating support.
3. Proper cleaning of the duct from inside and outside both.
4. Repairing of Bus Duct and modification of cover of LV Bushing of G.T. so that water droplets may not enter inside the duct. Material required for modification shall be provided by BHEL.
5. Painting of all sides of all copper bus plates with epoxy resin insulating materials suitable for 11kv in double coats. Sufficient time shall be given before applying second coat in order to complete dry out of previous one.
6. Installation of supporting insulators (80NO's) for 11KV Bus Bar. All supporting insulators shall be provided by BHEL.
7. Fixing of copper bus plates with supporting insulator properly.
8. Assembly of dismantled cover plate of 11KV Bus duct.
9. All HT nuts and bolts and if any copper bolt with nut is required the

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same will be arranged by BHEL Bhopal.

ii.9 Dismantling of old governing system & Assembly ,erection and commissioning of Governing system, associated cabling and termination

i) Dismantling of old governors and accessories and transporting to store.

ii) Completing all the civil works involved in the erection/installation of system which may include chipping of concrete block or making platform etc wherever required.

iii) Erection of new panels and Electro Hydraulic Governor.

iv) Cabling and fixing of Instruments, Transducers, and Alarm Annunciation as required in the design.

v) Assistance to be rendered for Testing and commissioning of the new Governing system.

vi) All the equipment including Governing equipment, etc. shall be provided by BHEL.

vii) Required termination, cabling ferruling and tagging is in the scope of the contractor.

viii) The cables should be properly dressed, tagged and terminated. Associated glands, tags and ferrules should be supplied by the sub contractor.

ii.10 Modification of the control room, associated panel work and wiring of flow relay.

1. The old control desk has to be suitably modified for the mounting of the new meters, switches and indicators.
2. The required panel is to be cut out and suitably modified.
3. The panel is to be refitted , properly finished and painted suitably.
4. Suitable connections, cabling and termination for tripping and interlocks with the flow relay is in the scope of the sub contractor.

ii.11 Installation , mounting cabling and termination of the speed probe.

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GENERAL NOTES FOR REASSEMBLY:

i) All consumables, gaskets, 'O' rings, nut bolts, studs, dowels required during erection shall be arranged by the sub-contractor at his own cost.

ii) All erection T&P as available, EOT cranes facility, compressed air facility as available, turbine oil required at the time of erection and commissioning shall be given by UPJVNL free of cost. Any deficiency in erection T&P or compressed air supplies if found shall be arranged by sub-contractor free of cost.

iii) All the match marks should be carefully checked and all care should be taken during erection of various components.

iv) All material required for alignment including S.S. shims and molycote grease shall be arranged by the sub-contractor at his own cost.

v) After pressurizing of D/T, there should be no leakage from gland seals and D/T and spiral windows. Cracks near D/T window should be welded by making grooves.

vi) Proper working of ejector, siphon and pump is to be ensured.

vii) There should be no leakage from bearing housing, windows and coolers etc. All gaskets of windows, coolers and 'O' rings required shall be arranged by the sub-contractor at his own cost.

viii) After opening of the main governing oil valve check that there is no excessive leakage of oil from bushes of oil header and any oil pipeline.

ix) Check all the systems working successfully before running of machine.

x) After running of machine on full load for 72 hrs. Check tightening of all the bolts.

xi) All the nut bolts should be properly locked wherever required as per procedure.

xii) Assistance to be rendered in PG Test, vibration measurement & balancing of the unit.

xiii) Below mentioned Tools & Special Equipment shall be supplied by BHEL:

-ONE SET STATOR LIFTING ARRANGEMENT

-ONE SET STATOR CORE TIGHTENING TACKLES/CORE BUILDING AND PRESSING EQUIPMENT

-ONE SET SPANNERS AND SPECIAL TOOLS ENCLOSED IN A CABINET

-ONE SET WIRE ROPE, SLINGS WITH D-SHACKLES,

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EYE BOLTS ETC.

-ONE SET SWEEP GAUGE AND CORE BUILDING TOOLS

-ONE SET THRUST PAD WITHDRAWAL GEARS

-ONE SET TURBINE AND GENERATOR SHAFT COUPLING BOLTS TIGHTENING EQUIPMENT

-ONE SET POLE REMOVING AND REPLACING TACKLES

-ONE SET POLE KEY WITHDRAWAL GEARS

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Annexure-I

Special condition for subcontractor

1. Execution plan of this work in a unit wise manner vis-à-vis receipt of new equipment from BHEL, Bhopal plant has been furnished tentatively as under:

Sl. No.	Activity Description (Brief)	Unit-3	Unit-2	Unit-1	Unit-6
1.	Start of unit dismantling; transportation of assemblies to Bhopal for repair; storage/ preservation of dismantled components; repair of turbine parts at site; etc.	01.12.11	01.08.2012	01.04.13	01.12.13
2.	Receipt of new generator components and start of their erection, testing, etc.	31.01.12	30.09.2012	30.05.13	31.01.14
3.	Receipt of new turbine components and start of their erection, testing, etc.	30.04.12	31.12.2012	30.09.13	30.04.14
4.	Reassembly & re-commissioning of unit.	31.10.12	31.06.2013	28.02.14	31.10.14

*** All above dates are tentative (Subcontractor should be ready to mobilize the site if the handing over of Unit is pre pone by customer).**

2. **Job completion period is 11 month for a single unit (including dismantling, transportation, re-assembly and commissioning) and for all four Units the completion period shall be 35 months.**
3. **Mobilization period shall be of 10 days** from award of the work.
4. This job shall be under guarantee period for **one years** after date of successful re-commissioning of the unit. In case of any problem arising in the machine, same shall be attended by sub-contractor free of cost during

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the guarantee period. Any consumables required for the above job shall be provided by sub-contractor free of cost. Sub-contractor shall have to mobilize their team at site within **48 hours** of the reporting of any fault.

5. It shall be in interest of sub-contractor to visit the site before quoting for the work.
6. Any other activity not stipulated above but necessary for completion and commissioning of the machine shall also be treated to be in the above scope of work and have to be done by sub-contractor at no extra cost.
7. Any other item other than Annexure-II, if required to be transported to BHEL Bhopal plant for reverse engineering / repair / rectification will be carried out by the sub-contractor free of cost.
   Since it is a R&M work, repeated assembly, dismantling, correction, rectification, finishing, transportation and modification etc. may have to be carried out for successful erection and commissioning of the unit. These will be under taken by the agency within the quoted price.
   Also touch up works, minor repairs, servicing, preservation of components received at site shall be in the scope of the agency within the quoted price.
8. If it is found that because of non-arrangement of proper tool / plant / equipment by the subcontractor the work at site is suffering, BHEL posses the right to arrange for the same and deduct the cost of such arrangement including overheads from subcontractor bills.
9. **TERMS OF PAYMENT :**

9.1 Payment shall be made up to a total of **90%** of the **Contract Value** of **Actual Works Executed** against **Monthly Progressive Bills** submitted by the contractor in duplicate based on measurement of work done and submission of necessary documents such as Labor License, Workmen Insurance, Wage Payment Sheet etc. as applicable after duly verification and certification by BHEL Site Engineer. First Progressive Payment shall be released only after deposit/recovery of the Full Amount of Security Deposit in the prescribed forms

9.2 **5%** of **Contract Value** shall be released after **Successful Commissioning of Unit** and **Final** 5% **Payment/Balance Amount** shall be released after **PG test** on submission of : No dues certificate against any material/T&P issued to them, No dues certificate from town administration for accommodation provided, No dues certificate from C.I.S.F./Security Personnel for gate passes issued, IR clearance, Final payment sheet for wages paid to all personnel employed by him at site, Service Tax Deposit Receipt for Progressive Payments if not submitted, PF Deposit Receipts, Certification by the Contractor on the Final Bill that **the claim is in full and final settlement of all their claims in respect of the contract**, and any other Clearances as applicable.

9.3 For all the bills, following percentages of individual bill amount for

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respective area shall be ear marked for the following activities & percentages given below :

1) Adherence to safety requirement	1.0%
2) Proper supervision	1.0%
3) Cleaning, House keeping & overall up keep of working area	1.0%

The above percentages of bill amount of respective areas will be deducted / retained in case of non-compliance. The payment for activity no. 1 & 2 shall be deducted & no payment will be made under any circumstances on non compliance, however for activity no.3 shall be retained and payment for 50% of the withheld amount can be made with next bill, if the activity is completed before next billing cycle.

10. Rate for extra work beyond the scope shall be Rs.60/- (Rupees Sixty only) per man-hour Inclusive of all costs.
11. No idle labour / over-run charges shall be paid in the event of any stoppage of work or the completion period getting extended for any reason whatsoever.
12. All dismantled parts have to be properly match marked with the help of center punch letter/number punch or point marks before dismantling. All-important readings shall be taken at every stage of dismantling and recorded properly in a register.
13. Various machine components/ assemblies are being repaired at BHEL, Bhopal. These assemblies and other new supplies shall be despatched by BHEL, Bhopal to site. Unloading and preservation of these items shall deem to be included in the sub-contractor's scope of work. Sub-contractor has also to arrange preservation of other dismantled components before & after repairs during the entire period of work at site.
14. Sub-contractor shall have to deploy sufficient experienced engineers, experienced supervisors and sufficient number of skilled technicians on full time basis at site. Sub-contractors shall have to deploy sufficient numbers of skilled technicians especially experienced in the works of hydro machines. In addition to above two specialist in the area of Hydro Turbine & Hydro Generator are to be arranged by sub contractor.
15. Sub-contractor shall arrange a computer, loaded with windows software, alongwith all accessories/peripherals including printer with cartridges for BHEL office use during entire period of execution of work. However, stationery for use shall be provided by BHEL.
16. Sub-contractor shall also arrange an activated mobile phone for official use of BHEL personnel at site till the actual completion of the

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job. The rental charges as well as all call charges etc. shall be borne by sub-contractor during the entire execution period of the job.

17. Sub-contractor shall arrange for availability of internet round the clock for official use of BHEL personnel at site, all rental charges for entire period of execution of work shall have to be borne by the sub-contractor.
18. One full time office attendant to be kept in BHEL site office for office work.
19. Subcontractor will have to arrange for security person for site, store, BHEL office & residence for the entire duration of the project.
20. All parts decided to be preserved by BHEL shall be wrapped in paraffin paper & rubber after cleaning and shall be kept in dry place. Paraffin paper shall be arranged by the sub-contractor on his own cost.
21. All pipes shall be closed & ends shall be blanked with cardboard etc.
22. All nuts, bolts, studs & dowels shall be cleaned applied grease and packed in polythene packs with proper tagging. Grease to be supplied by sub-contractor.
23. Sub contractor has to provide domestic kitchen facilities and cook, helpers etc.
24. Provision of communication facilities like telecom, PC with internet facility etc.
25. Provision of crawler mounted crane 75T capacity and wheel mounted crane 8T capacity with operators, as per requirement.
26. Provision of Tractor and Trailer with drivers and helpers.
27. Provision of miscellaneous material handling facilities and accessories.
28. Installation of piping, taps, drains etc. for drinking and cleaning water facilities.
29. Electrification with adequate illumination, cooling/heating, ventilation facilities for human comfort.
30. Provision of manpower required for material handling, storage, office work, attendants, catering and sanitary work.
31. Nuts, bolts, dowels, studs, will be checked thoroughly & damaged ones shall be arranged by sub-contractor at his own cost. Size and material will be as per drawing and site requirement.
32. All old rubber parts taken out during dismantling shall be properly tag marked and kept safely to have proper dimensions for arrangement of new ones.
33. All consumable like markine cloth, Kerosene oil, Petrol, Jute, Diesel,

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grease, sufficient quantity of asbestos cloth for rotor & stator and other preservatives shall be arranged by the sub-contractor at his own cost.

34. All measurement, level and clearance shall be recorded at each stage of repair & assembly of machine as per direction of BHEL engineers.
35. EOT crane facilities shall be given free of cost by UPJVNL (normally for two shift operation) however to ensure three shift operation contractor should provide EOT crane operator & maintenance crew duly approved by UPJVNL free of cost.
36. All consumable required for grinding, cutting, welding, assembly (e.g gasket, packing, O-ring, small fastener, paints, suitable electrodes (D&H make), S.S. covers as required, S.S. shims & molysulf grease, titanium putty, general purpose fasteners, etc shall have to be arranged by the sub-contractor at his own cost after BHEL approval.
37. All material required for making platforms for doing the job shall be arranged by the sub-contractor at his own cost.
38. All T&P like welding generators, transformer, grinders, cutters, chain pulley block, jacks, pneumatic hammers along with compressor for civil works, pull lift machines, D shackles, heating oven, etc. required for completion of the job, shall be arranged by the sub-contractor at his own cost.
39. The contractor should bring a digital megger of the range not less than 100 GΩ, a micro-ohmmeter/dc resistance meter,a mili ampere tongue tester/clamp meter which should be used during assembly and erection work during the entire execution period. Besides the contractor should arrange an 3Φ secondary injection kit during commissioning period.
40. The contractor shall arrange a ferule printing machine and master gauges for required calibration and leveling of old gauges
41. Special T&P shall be provided free of cost to sub-contractor at site. However special spanners, slings, required for the jobs but not available with UPJVNL in usable conditions shall be arranged by the sub-contractor at his own cost. In case of any damage to devices, T&P etc. provided by BHEL, The sub-contractor will have to bear the replacement/repair cost.
42. Extreme care should be taken while using the preservatives or inflammables and all safety rules should be observed while lifting/lowering the heavy equipment/material. All safety rule in respect of handling of equipment of material is also to be observed.
43. ALL the testing materials required for testing such as valves, pressure gauges, pipelines & electrical testing equipment etc. to be arranged by the sub-contractor at his own cost.

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44. All electrodes should be properly baked before use as per direction of BHEL engineers and welding sequences should be such that there is no distortion.

45. All spares to be brought from stores and to scrap to be returned scrap yard including its transportation at no extra cost. Sub-contractor is required to keep a vehicle on full time basis at site during the entire execution of the work.

46. All arrangement for in SITU modification / repair / rectification of various parts like surface of pivot ring, etc shall be responsibility of sub-contractor at his own cost. Ovality, if any, is to be removed by sub-contractor and will be maintained as per drawing.

47. Any parts for repair will be allowed to be taken out from the power House to works of the sub-contractor after giving indemnity bond of required amount for safe custody of the part. These parts shall be sent to power House after proper packing so that the same may not damage during transportation.

48. All joints to be dye tested for checking proper welding and also welding of chamber is to be checked by dye penetration testing to check any crack etc. DPT kits (Aerosol spray type) to be arranged by the sub-contractor at no extra cost.

49. The sub-contractor at his own cost as per BHEL advice shall do arrangement of pre heating of the jobs.

50. E.O.T crane facility and electricity required for completion of job will be provided free of cost. However electric bulbs, hand lamps, flexible wire, cable, floodlight etc. required shall be arranged by the sub-contractor at his own cost. The main switch of 100A440V.3 phase capacity with fuse of good quality for connecting welding Generator will also be arranged in sufficient quantity by sub-contractor at his own cost. The damage of switch fuse units, from where the supply will be given to the sub-contractor will be made good by the sub-contractor during work and will be handed over in healthy conditions after completion of job.

51. For ensuring of proper thickness of the runner chamber, the thickness measurement instrument will be arranged by the sub-contractor and thickness before starting of welding work and after completion of work will be recorded and shall be ensured that thickness of runner chamber is not below 20mm at any place.

52. The sub-contractor shall make his own arrangement to eliminate all fumes/smoke generated due to welding at his own cost preferably airlux fume eliminator of L&T make should be used.

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53. For generator and Electrical works, insulation painting and synthetic enamel painting shall be carried out by spray painting only.
54. Two coats of insulation paint shall be sprayed using oxygen pressure as per recommended or adopted procedure laid down by BHEL.
55. Insulation level/ resistance of each equipment shall be raised up to the maximum possible extent and improved from previous level.
56. Synthetic enamel paint of approved make such as Asian/ Jenson & Nicholson / Berger Grade-1 quality shall only be used. Paint shall be packed in sealed container of manufacturer and shall be opened in presence of by BHEL Engineer or his authorized representative. Synthetic enamel paint shall be provided by sub-contractor free of cost.
57. Synthetic enamel paint shall be done by spray painting only up to the maximum possible extent.
58. Before applying synthetic enamel paint, old paint will be removed by emery paper/ wire brush and surface should be cleaned perfectly. One coat of red oxide primer of approved make shall be applied before doing of two coat synthetic enamel paint on each equipment and parts in similar shade on all places where synthetic enamel paint has been applied on the equipment under scope.
59. Tightening of fastener should be done by bolt torque spanner as per directions of BHEL engineers.
60. Some of the assemblies are earmarked for repair at BHEL, Bhopal plant as mentioned in the scope. In case of any further repair required in these assemblies/ components or any modification required in retrofitting of new components in the old assemblies, same shall be carried out by sub-contractor at site free of cost.
61. After running of machine on full load for 72 hours. Checking and re-tightening of all the bolts is included in the scope. All the nut bolts should be properly locked wherever required as per procedure.
62. Above-mentioned renovation job involves repair/ replacement of various components in the unit. Any other work of minor nature not mentioned/ not covered above, but essential for the completion of the above work & successful re-commissioning of the unit, shall also be treated to be within the scope of work.
63. Daily work planning scheduling and reviewing of work will be done by the contractor every morning & the program must be submitted on daily basis to BHEL. Contractor's representative will attend daily review meeting with BHEL every evening in the work control office and submit progress report.

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64. Safety inspection of all T&P's & welding machines of the contractor should be completed before start of overhauling work. All safety norms are to be followed during overhaul. During overhaul contractor should exclusively nominate safety supervisor who shall coordinate with BHEL on safety aspects. Contractor shall ensure safety to all their employees at site of work. All the safety equipment as per requirement of the job shall be arranged to their workmen at site by contractor in order to avoid any accident failing which action will be taken against the contractor:

(a) If BHEL site Engineer observes that safety measures taken by the contractor are not as per requirement of job, a lump sum amount of Rs.5000/- will be levied as penalty with first warning.
(b) For subsequent failure of the contractor an amount of Rs.20000/- limited to max. 5% of the contract value will be levied as penalty. Further, in any case, BHEL will still hold the right to procure the required safety appliances at contractor's cost.

60. All the T&P and measuring instruments to be used by the contractor must be available with valid calibration certificates. The contractor shall submit the list of available IMTE's along with their calibration certificate before start of the work.

(a) If contractor fails to submit the same before commencement of the work, BHEL shall impose a penalty of Rs.500/- per IMTE and the same will be recovered from contractor's progressive payments.

(b) In the case of failure to submit the above details or in the event of non-availability of the required IMTEs/ T&P's up to two days after start of the work, BHEL shall have the option to provide the calibrated IMTE/T&P on chargeable basis. In addition, a penalty of Rs.1000/- per item shall also be levied on the contractor.

(c) BHEL representative before start of work will check measuring instruments brought by the contractor. They should have valid and requisite calibration certificates in original at site.

61. Following must be submitted before start of work.

(d) Schedule of work (PERT/BAR Chart).
(e) Resources list including manpower grade wise T&P's and IMTE's (Tentative requirement given in subsequent paragraphs).
(f) Worker's insurance (above 09 m) and valid labour license.Any

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other information/document required as per prevailing statutory laws/regulations.

62. Contractor has to arrange for the stores and office at site; space for the same shall be made available as per the availability at site. The contractor shall be responsible to provide, at his own cost, all necessary facilities like residential accommodation with sanitary facilities, transport, electricity, water, medical, bonus etc. as required under various labour laws and statutory rules and regulations framed there under to the personnel employed by him.

63. Contractor will have to ensure implementing 'Safe Work Practices ' circulated by BHEL.

64. Subcontractors to ensure that no physically/ mentally unsound and unfit person is employed/ contracted at any time in any activity performed / intended to be performed for BHEL, PS-NR at site and shall maintain the requisite health records from competent medical professional/ Practicenor.

65. **SERVICE TAX: Price quoted shall be exclusive of service tax.** The service tax, as legally leviable & payable by the contractor under the provisions of applicable law/act, shall be paid BHEL as per contractor's bill. However, contractor shall have to submit proof of service tax deposited by them immediately after the deposit but not later than the next bill submitted after the due date of deposit. The contractor shall furnish proof of Service Tax registration with Central Excise Division covering the services covered under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by the contractor on BHEL for this project. The contractor shall obtain prior approval of BHEL before billing the service tax amount
With introduction of Cenvat credit rules 2004 which came into force w.e.f. 10.09.2004, excise duty paid on input goods including capital goods used for providing the output service and service tax paid on input service can be taken credit of against the service tax payable on output service. **As such, while offering the rates, the contractors may take into account the benefit of above provisions as the cost of input of contractors will be the cost net of excise duty and service tax and adjust their offer price accordingly to make it more competitive.** In respect of Construction Services, the contractor should avail abatement of 67% as per notification no. 15/2004-ST dated 10.09.2004 as & if applicable.

Annexure-II

List of Items Identified for Repair at BHEL Bhopal Plant for Rihand HEP (6x50mw)

SL. NO.	ITEM DESCRIPTION	REMAKRS
1	Dismantled Stator Core & Coils	
2	Rotor Poles	
3	Thrust Pads & Generator Guide Pads	
4	Slip Ring & Brush Gear Assembly	
5	Turbine Runner	
6	Guide Vanes	
7	Guide Vane Servomotors	
8	Bearing Bodies	
9	Turbine Guide Bearing Pads	
10	Breaking Links	
11	Top Cover	
12	Pivot Ring	

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