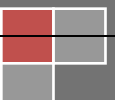


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TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED



TECHNICAL CONDITIONS OF CONTRACT (TCC) CONTENTS

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Chapter - I: PROJECT INFORMATION

1.0	Project Information
	<p>1) Purchaser : M/s. MPPGCL , Khandwa</p> <p>1) Project Title : Bearing -1 and 2 Revisioning ,MOP overhauling for rectification of Axial Shift issue of Main Turbine of Unit-1 at 2x600 MW, SSTPP, MPPGCL, Dongalia</p> <p>2) Railway Station : Khandwa</p> <p>3) Nearest airport : Indore</p>

The Bidder shall visit site and get acquainted himself with the conditions prevailing at site before submission of the bid. The information given here in under are for general guidance and shall not be contractually binding on BHEL/ Owner. All relevant site data/information as may be necessary shall have to be obtained /collected by the Bidder.

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Chapter – II: SCOPE OF WORK

The work under the scope of these specifications is broadly as follows.

PRE SHUTDOWN WORK

1. Mobilization of site.
2. Arranging Gate pass, insurance & Accommodations to the contract personnel.
3. Shifting of material store and T&Ps.
4. Shifting of special T&Ps to turbine floor.
5. Removal of Enclosures Cover if required and erect back after OH if available.
6. Shifting of special T&Ps to turbine floor.
7. Removal of Enclosures Cover if required and erect back after OH if available.

SCOPE OF WORK:

SCHEDULE -1: BEARING -1 AND 2 REVISIONING INCLUDING MOP OVERHAULING FOR RECTIFICATION OF AXIAL SHIFT ISSUE:

1. Bearing 1 and 2 pedestal cover dismantling & lifting
2. Removal of C & I probes and axial shift by MPPGCL after removal of Bearing 1 and 2 pedestal covers.
3. Loosening of bearing -1 & 2 pedestal cover and lifting of cover.
4. Dismantling of yoke and clearance to be recorded.
5. Removal of keys - axial and radial keys.
6. Dismantling of bearing-2 top half and checking of thrust pad for healthiness.
7. Removal of bearing-2 bottom half if required.
8. Matching of keys with pedestal and bearing.
9. Inspection of bearing-1 side pads, yoke clearances etc.
10. Dismantling of bearing-1 top half and bottom half for healthiness checking.
11. DPT and UT of Bearing 1 and 2.
12. Assembly of bearings.
13. Checking of parallelity of bearing.
14. Fitting of axial and radial keys.
15. Fitting of yoke and yoke key with proper clearance.
16. Decoupling HP-MOP
17. Dismantling of MOP top casing
18. Inspection of various internal parts of MOP.
19. Checking various internal parts of MOP for clearances & correction
20. Replacement of HP-MOP coupling if required.
21. Replacement of MOP bearing & matching to set the clearances
22. DPT & UT of the MOP components.
23. Speed sensor gear/disc removal if required and its restoration
24. MOP float checking
25. HP-MOP alignment & coupling
26. Box up of MOP

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Chapter – II: SCOPE OF WORK

27. Box up of pedestal
28. Mounting of C & I probe by MPPGCL.
29. Putting machine on barring gear.

SCHEDULE-02: -REPLACEMENT OF BEARING (OPTIONAL)

1. Dismantle the LO, jacking oil line from bearing.
2. Remove the old bearing
3. Assistance in transporting the New Bearing from central stores to Site.
4. Cleaning of new bearing. Measuring the fitment dimensions such as bearing height, bore, journal dia. etc. And corrections if possible and DPT and UT of the bearing to be carried out.
5. Support matching of new bearing with the support plate and pedestal and between support plate and bearing torus/ spherical piece.
6. Matching of side pads and keys and correction of these to required size.
7. Putting the new bearing into the pedestal.

Note:

1. **EOT Crane in working condition shall be provided by MPPGCL, free of cost, however its skilled operators shall be in the scope of bidder.**
2. **Bidder has to depute Reputed Testing Agency along with Test kit & accessories to carry out DP & Ultrasonic test in consultation with BHEL Site-In-Charge**

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Chapter –III: SPECIAL TERMS AND CONDITIONS

3.1 SPECIAL TERMS AND CONDITIONS:

1. The bidder shall submit following documents to the BHEL Engineer in charge before starting of the work at site: -
 - a) Valid labour license of total Nos. of labours.
 - b) Valid labour Insurance policy to cover all the workers.
 - The Contractor shall necessarily take Workmen Compensation Policy and if required Third Party Liability Policy shall be taken by bidder.
 - c) **Medical Fitness Certificate of each worker issued by registered medical practitioner.**
 - d) A photocopy of employment card issued to each worker as per format prescribed in factory rules.
 - e) List of safety appliance provided by the contractor to their workers with receipt.
 - f) Valid test certificate issued by competent authority as per factory rules for the T&P (like pulling / lifting devices, slings, machines etc.) to be utilized at site.
 - g) List of personnel's and workers deputed / deployed along with their full address proof, Police verification etc., shall be get done of his workers by the contractor.
 - h) Submission of Indemnity Bond.
Subcontractor should assure that the repair of the equipment covered in the scope of this offer will be conducted with the best of skills and know how available with Subcontractor and in conformance with the clearances and adjustments set forth in manufacture's drawing instruments and other information's furnished to Subcontractor.
2. Bidder shall visit site well in advance for identification & to ensure availability of required special T&P as well as other infrastructure required.
3. During execution of site it may be required to close the site temporarily, In this case De-Mobilization & Re mobilization charges shall not be payable.
4. All consumables required for the overhauling will be bidder`s scope.
5. The various setting, clearances, adjustments and benchmarks will be restored to the extent possible during rectification to the condition as per the erection and commissioning log sheets available with customer. If however we are not able to produce erection / commissioning log sheets, efforts will be made to attend the best possible parameter or the conditions as observed at the time of dismantling of the equipment in consultation with us.
6. Subcontractor must prepare PERT CHART/BAR CHART. Daily monitoring will be done jointly and log sheets of important activities should be noted down and signed jointly.
7. Daily work planning, scheduling & reviewing of work will be done by the party every morning & evening and daily programme must be submitted on daily basis to EIC. Party also to submit the progress exception report. Bidder should also submit filled protocol duly signed every day/after completion of work.

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Chapter –III: SPECIAL TERMS AND CONDITIONS

8. All the works shall be carried out as per the instructions and to the satisfaction of the Engineer In-charge.
9. The contractor will attend contributory to faulty and poor workmanship during commissioning and trial run of the equipment.
10. Round the clock working under expert supervision shall be ensured by the contractor deploying two equal parallel strength of groups in 12 hrs. Shift with equal T&P for all the jobs so as to complete the work in stipulated period or earlier.
11. Bidder has to engage his manpower for 24-hour work in all working days/holidays as per the instruction of Engineer-in-charge headed by responsible and experienced Engineers/Supervisors. The bidder has to submit detailed manpower deployment program for round the clock work before commencing overhauling works
12. It is the responsibility of contractor to keep the plant, equipment, machinery and surrounding area clean.
13. Removal of insulation from turbine, stop and control valve, associated pipe lines and through cleaning of subjected area is in the scope of bidder.
14. Bidder has to engage competent/skilled manpower as per the requirement of the respective jobs. BHEL reserve the right to disallow any worker to continue the work, if found unsuitable for the specific job.
15. The names of working persons like Site in-charge, supervisors, foreman, main fitters to be deployed during the job with full details has to be submitted stating their area of work and experience and specialization of the work to site in-charge before the start of work. BHEL may ask to change/delete the person not found suitable for the work at any point of time during execution of job. For any addition and deletion of the working person prior permission from BHEL shall be taken.
16. Subcontractor has to ensure that all the key persons must continue till completion of job i.e. machine comes on load. Subcontractor manpower (adequate) should remain at site for a period of **03 days after machine comes on full load.**
17. **Mobilization of full strength manpower and T&P shall be done immediately within 01 days after receipt of LOI or as per Intimation from BHEL.**
18. Work distribution sheet for all the workers/supervisors deployed shall be submitted to BHEL one day in advance on daily basis.
19. Subcontractor should mobilize additional resources such as plant, equipment's, material as may be required by site in-charge to improve the progress of the work if the progress of the work is not satisfactory.
20. Subcontractor should get registered under relevant sales tax and or work contract Act (VAT) where the jobs are executed.
21. Party has to quote lump sum rate for all activities mentioned in the price bid as the actual quantities may vary during overhauling of the unit for which the contractor is not permitted to raise any dispute or claims. Items mentioned as optional will be taken up depending on condition, availability of spares and requirement.

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Chapter –III: SPECIAL TERMS AND CONDITIONS

22. Radiography and stress relieving of the joints are in the scope of the contractor.
23. **Removals of insulation are in the scope of the contractor.**
24. Scrap & insulation etc. is to be shifted to scrap disposal area as indicated by the Site-in-charge.
25. One administrative personnel to control the resources and attendance of the workers to be ensured.
26. Contractor shall arrange certified HP welder for welding job as required whose welding test will be conducted.
27. Free electricity shall be provided by customer but duties if any as applicable shall be paid by contractor.
28. Argon, Oxy- Acetylene gas shall be arranged by the contractor with cutting/welding set / argon welding set and other welding appliances.
29. Enerpack make close height Hydraulic jacks of 50T and 100T capacity - 4 nos. each shall be arranged by the contractor in 100 % working conditions.
30. If the duration of work continues beyond stipulated period due to any reason, no claim for compensation will be entertained.
31. The work details are brief & for Subcontractor knowledge only. Subcontractor will have to do all the related works as per requirement.
32. The contractor will be responsible to pay the damages to the property of Board or individual caused by his worker during the course of contract. If the contractor fails to pay the same it will be recovered from his bill.
33. No compensation claimed for idle labor for any reason will be entertained by BHEL.
34. All general tools and plants for execution of the work will have to be arranged/ maintained by the contractor at his own cost & risk.
35. In normal course, the interpretation of the under signed on any matter or decision given by him on any disputable points will be final and binding on the contractor.
36. Successful bidder is to obtain labor license before the start of the work.
37. Successful bidder is to obtain necessary “No Dues” certificate before de-mobilization from site.
38. Successful bidder has to arrange Site mobile recharge till the site closing.
39. LAP-TOP with latest configuration, DVD/CD writer/pen drive, its peripherals including printer-scanner and one USB Modem for Internet connectivity to be provided for BHEL site office.
40. Barring Gear is the essence of the contract.
41. Sufficiently adequate man power T&P and other resources should be mobilized by the contractor to operate round the clock work progress with standby technicians to be deployed immediately if need arises. Offer should be submitted considering these requirements.
42. Accommodation for the sub-contractor’s manpower will be provided if made available by the customer as per the applicable charges.
43. Contractor shall arrange vehicle for his manpower transportation.

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Chapter –III: SPECIAL TERMS AND CONDITIONS

44. Magnetic base drilling machine along with drill/reamer is required (Wherever Applicable) for dowelling of cylindrical support of bearing in case of their replacement.
45. Taper reamer along with drill is to be arranged for dowelling of MOP (Wherever Applicable).
46. The bidder shall erect approach platform as per requirement and dismantle the same.
47. The bidder shall be fully responsible for maintenance of records of his employees.
48. The bidder shall start the work only after instruction by contract operating authority.
49. **Scaffolding pipes, clamp, aluminium planks, Jallies &, 40 mm thick wooden planks are to be arranged by Sub-contractor for various platforms as required for the and Safety will be taken on priority basis.**
50. **Bidder has to arrange certified person to approve scaffolding erected before use.**
51. Contractor reconciles the material and submits along with the bill. To credit the balance spares worn out articles/spares and scrap in the main store.
52. Contractor shall clean the surrounding working area within three days immediately after completion of work/ Machine taken onto barring.
53. Give proper assistance to maintain the readings at site for the protocol.
54. Condenser tube bundles shall be covered properly with wooden planks/scaffolding boards, tarpaulins etc at the top of tube bundle to prevent falling of foreign material on condenser tubes from top of condenser/LP turbine.
55. Cast iron plates shall be first matched with calibrated surface plate by manual scrapping & matching and then above cast-iron plates shall be used for scrapping coupling faces to correct convexity/ concavity/taperness of coupling faces.
56. Adequate numbers of tarpaulin are to be arranged by the sub-contractor for covering of various equipment during insulation removal / application.
57. For carrying out MPI, NFT, UT, DPT etc. bidder should engage competent certified personnel/vendors along with calibrated instruments/equipment's etc.
58. Ultrasound test kit, MPI, DP Test kit of standard makes like ITW SIGNODE / CHECK MATE / ORION 400 ml Aerosol cans and suitable colour paint to repaint the weld joint after DP test along with required accessories and consumables
59. Transportation of material required during overhauling from central work shop to site is in the scope of bidder. Tractor & trailer, hydra, crane shall be arranged by bidder for shifting of materials.
60. ~~Once Turbine Rotors are removed from their casings, high spots on their coupling faces shall be removed & they will be placed on the turbine bearings. The rotors will be coupled with complete loose/fitted coupling bolts & stretched to full value for measurement of coupled run-out & swing value. Necessary correction by scraping etc. shall then be done, if required, in order to achieve acceptable run-out/swing values. This process of correction may require more than one attempt. Similar process shall be applied to Gen-Exciter coupling for achieving exciter end swing value.~~

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61. The bidder/sub bidder shall have to take utmost care of spares parts/materials during dismantling, assembly, storage and handling of equipment's etc as applicable.
62. The contractor shall be fully responsible for erection of rigid and stable (enough) scaffolding for the safety of persons carrying out work. (Scaffolding material shall be arranged by bidder)
63. The bidder shall be fully responsible for the safety of his personnel during the work at site, and shall ensure the use of safety appliances by his workmen.
64. ~~Calibrated surface plate of size 1 Mtr. x 1 Mtr. and flatness within 06 microns. This is required to correct convexity/concavity and taperness of coupling faces.~~
65. Preheating/post heating, stress relieving and RT will be arranged by bidder.
66. Bidder has to give necessary assistance for drawn of spares from stores & returning the damaged spares to store.
67. Any fixture required for the above job shall be fabricated by the bidder.
68. IBR qualified welder for use in welding of high-pressure pipes etc., as applicable.
69. Machines, T&PŠ required for reaming & honing of coupling holes shall be arrange by bidder.
70. To & fro transportation of their entire team on their own from place of stay to airport/station, from place of stay to site and to meet other essential requirements.
71. All testing equipment required as per above scope of work shall be in the scope of bidder.
72. The bidder shall provide all necessary assistance while commissioning back the Turbine, Generator & aux systems mentioned above and shall rectify, if any, problems encountered during commissioning.
73. The bidder shall provide all necessary assistance during commissioning of T/G Set
74. ~~Hydraulic torque wrench with operator shall be arranged by bidder for decoupling & trial coupling, final coupling if required.~~
75. ~~All Casing and Valves fasteners should be loosened / tightened by Induction Heating Method. Suitable capacity Induction Heating Machine shall be in the scope of bidder. In addition to this gas heating arrangement should be kept ready for emergency.~~
76. ~~Blast cleaning shed erection and dismantling and cleaning of scrap alumina and alumina dust around the blast shed.~~
77. ~~Alumina blasting work of turbine rotor, blades, guide blade carriers, valve cone, valve stem etc. should be carried out at two places round the clock, Bidder shall observe safety precaution while carrying out alumina blasting.~~
78. ~~Required white fused Alumina powder shall be arranged by bidder.~~
79. Removal of thermal insulation wherever required for working.
80. Sufficient Halogen Lamps shall be in the scope of bidder.
81. Skilled EOT Crane operators, for round the clock working for Two cranes are in bidder's scope.
82. ~~Reaming & honing of coupling holes if required shall be carried out by the bidder.~~
83. Bidder has to fulfil all HSE related requirement at site.
84. NDT Equipment, accessories and consumables in bidder scope. Equipment calibration & Safety gadgets in bidder scope

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter –III: SPECIAL TERMS AND CONDITIONS

NOTE:

1. The specific (minor) work which is not mentioned in the scope of work but required to be carried out for completion of subject work is in the bidder's scope.
2. Decision of BHEL site in charge regarding interpretation of the scope of work shall be final.

LIAISON WITH ALL STATUTORY AUTHORITIES:

- Compliance of statutory provisions, whether mentioned in this contract or not shall be binding on the contractor.
 - a) If there is any change in labour laws after the contract has been awarded, then the new law shall automatically be binding on the contractor.
 - b) No additional financial compensation shall be paid by BHEL to the contractor on account of increased expenditure caused by a) and b) above.
 - c) Liaisoning with local commercial tax dept. to obtain Coml. Tax exemption certificate.

PAYMENT TO WORKERS:

- Payment to workers shall be done in the presence of BHEL representative or through bank account only.
 - a) The contractor shall intimate the day of payment at least three days in advance in writing along with copy of the pay sheet and attendance cards.
 - b) All workmen shall be covered by PF Rules irrespective of their period of employment.
 - c) Payment shall be made inside the plant premises and during office hours.

SUBMISSION OF DOCUMENTS:

- The contractor shall submit following documents at appropriate time either before or during the execution of the work and as directed by Site in-Charge.
 1. Test certificates of Pulling and Lifting machines and appliances.
 2. Details of workers to be deployed with name, address, category.
 3. Details of supervisory staff to be deployed.
 4. Authorization for receipt of materials and for signing of Measurement Books etc,
 5. Labour license specific to the contract.
 6. List of T&P brought into plant premises along with their serial numbers and dates/years of purchase.
 7. All the Staff/Workers deputed for the Job should have Insurance Cover and document in this regard should be submitted along with 1st RA Bill.
 8. List of consumables brought into plant premises along with their serial numbers and dates/years of purchase, along with test certificates wherever applicable.
 9. Insurance policy for the workers to be deployed in this contract.
 10. Safety undertaking.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter –III: SPECIAL TERMS AND CONDITIONS

11. Copy of ESI certificate to be furnished.

12. Proof of Payment of GST.

(Sl.No.11 to 12 are required before final bill is processed).

The contractor shall submit following documents in report form within 15 days from commissioning of unit after the overhaul/shut down work is completed:

- Details of work executed.
- Measurements against different schedules in compiled form.
- Material issue details.
- Material consumption details.
- Material returns details.
- Details of retrenchment benefits given to workmen.
- Details of issue of PF slip to workmen.
- Details of settlement of accident benefits if any to workmen
- Copies of pay sheets to workmen.
- Details and proof of remittance of PF to workmen (before final bill).
- No dues clearance from different stores of customer
- Valid labour license

Statutory Inspection

- Please refer General and Special Conditions of Contract. In addition to it the scope includes getting the approvals from the statutory authorities (like IBR, smoke nuisance inspector, anti-pollution authorities, labour officials). This includes arranging for inspection visits of such authorities periodically as per requirement, submitting documents etc. and payment of fees connected with it.

3.6 Safety:

Contractor should engage at 01 no. Qualified Engineer in each shift during the contract period. Strict Safety measures have to be followed at Site. Contractor shall also adhere to all the safety provisions of our customer. In case violation of any provision at site fine of Rs.500/- to Rs.2000/- at the discretion of our site in-charge shall be imposed for each of such occasion and shall be recoverable from the contractor's bill.

1. The contractor should ensure the use of 24 volt hand lamps and 24 volt transformer by his workers. The all electrical gadgets shall have plug top & proper earthing.
2. All T&P like pulling and lifting machine, chain pulley blocks, slings, D-shackles should be maintained in proper working condition. Necessary test certificate has to be submitted by contractor for lifting tools & tackles. Third party testing certificates is also must in C.G.
3. The contractor shall be fully responsible for the safety of his workers.
4. The Use of ISI mark safety helmet, ISI mark safety shoes, Goggles, hand gloves, ear plugs and nose mask is a must. In addition to this, a full body (safety) harness, face shield must be provided to workers carrying out work at height & cutting/ welding/ grinding respectively. Gas cutting set with flash back arrester etc. should be provided by the contractor and should ensure the use of these safety equipment's, all PPE by his worker while working.

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5. Scaffolding should be erected properly and strong enough with hand rails and it should not be used before getting it checked by Engineer-in-charge. It can be used after green tag from safety department.
7. The contractor shall be solely responsible for the safety of his workers & employees. The contractor must ensure that the persons working in site/nature jobs/ skilled jobs/ working with the welding machines, grinders, cutting set & other special T&P shall be having experience & expertise to perform that job. Contractor should engage physically and mentally fit manpower. The electrical connection / repair jobs shall be done only by the electricians.
8. The contractor shall ensure that prior to start of work all his workers shall get the safety training.
9. The contractor shall also take care for the safety of the equipments & persons working in the vicinity.
10. Customer at its own discretion may decide to recheck / retest some or all of the T&P / machines of the contractor inside the plant premises.
11. The helmets, safety shoes and safety belts issued by the contractor shall be conforming to relevant IS standards.
12. The contractor shall maintain the first aid box at site.

PROVISION OF PPEs

- Personnel Protective Equipment (PPEs), in adequate numbers, will be made available at site & their regular use by all concerned will be ensured
- The following matrix recommends usage of minimum PPEs against the respective job.

Sl.NO	Type of Work	PPEs
1	Concrete and asphalt mixing	Nose mask ,hand glove ,apron and gum boot
2	Welders/Grinders/Gas cutters	Welding/face screen, apron, hand gloves, nose mask and ear muffs if noise level exceeds 90dB. Helmet fitted with welding shield is preferred for welders
3	Stone /concrete breakers	Ear muffs, safety goggles, hand gloves
4	Electrical Work	Rubber hand glove, Electrical Resistance shoes
5	Insulation Work	Respiratory mask, Hand glove, safety goggles
6	Work at height	Double lanyard full body harness, fall arrestor (specific cases)
7	Grit/Sand blasting	Blast suit, blast helmet, respirator, leather gloves
8	Painting	Plastic glove, Respirators (particularly for spray painting)
9	Radiography	As per BARC guidelines

- The PPEs shall conform to the relevant standards as below and bear ISI mark.

Relevant is-codes for personal protection

IS:2925-1984	Industrial safety Helmets
IS:4770-1968	Rubber gloves for electrical purpose.
IS:6994-1973(Part-I)	Industrial safety Gloves(Leather & Cotton Gloves)
IS:1989-1986	Leather Safety boots and shoes.
IS:5557-1969	Industrial and safety rubber knee boots.
IS:6519-1971	Code of practice for selections care and repair of Safety foot wear.
IS:11226-1985	Leather Safety footwear having direct molding sole.
IS:5983-1978	Eye protectors.

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IS:9167-1979	Eye protectors.
IS:1179-1967	Eye & face protection during welding
IS:3521-1983	Industrial Safety Belt and Harness
IS:8519-1977	Guide for selection of industrial Safety equipment for body protection
IS:9473-2002,14166-1994, 14746-1999	Respiratory Protective Devices

The list is not exhaustive. The safety officer may demand additional PPEs based on specific requirement.

NOTE: All employee of vendor should wear company uniform along with company logo at work place. Please follow strictly. Otherwise it may lead to penalty under safety provision.

BIDDER SHALL ALSO FOLLOW MPPGCL SAFETY NORMS AT SITE

3.7 Important Safety Conditions:-Bidder has to ensure utmost safety at all associated workplace/s. Penalty for non-compliance of safety rules each time.

- i. Non using safety shoes per person per occasion --Rs.1000
- ii. Non using safety helmet per person per occasion --Rs.1000
- iii. Non using safety belt per person per occasion --Rs.1000

3.8 OTHER TERMS AND CONDITIONS

- 1.0 Successful bidder has to extend manpower assistance for minor cleaning/scrapping, etc.
- 2.0 ~~A copy of tender document with each page duly signed and stamped shall be submitted along with your offer as a token of your unconditional acceptance to this tender condition.~~ Also any deviation to the tender conditions shall be submitted in a separate paper duly signed by the bidder, any overwriting / correction by the bidder on the tender will not be recognized and the offer may be rejected on this ground.
- 3.0 General and special conditions of contract' enclosed herewith will be fully applicable, except otherwise stated in this enquiry. In case of any conflict, the conditions specified in this enquiry letter will prevail over that of the 'General and special conditions of contract'.

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Chapter – IV: T&Ps and MMEs to be deployed by Contractor

4. LIST OF MANPOWER REQUIRED

Sl.No	Manpower	Category	No. of Persons
1.	Site-in charge	Highly Skilled	1
2.	Foreman	Highly Skilled	1
3.	Supervisor	Skilled	2
4.	Store Keeper	Skilled	1
5.	HP Welder	Highly Skilled	0
6.	Welder (Non IBR)	Skilled	1
7.	Gas cutter	Skilled	1
8.	Millwright Fitter	Highly Skilled	As per requirement
9.	EOT Crane Operator	Highly Skilled	2
10.	Sarang	Skilled	2
11.	Fitter	Skilled	3
12.	Electrician	Semi-Skilled	1
13.	Jr.Filter	Semi-Skilled	4
14.	Insns.Lagger / Carpenter	Semi-Skilled	1
15.	Grinder Man	Skilled	1
16.	Rigger	Semi-Skilled	2
17.	Helper	Un-Skilled	6
18.	Office Boy	Semi-Skilled	1
19.	Safety Engr	Safety officer	1
20.	Expert Manpower	Generator, Governing & Associated Experts	±

This is an indicative list; the sub-contractor shall deploy adequate manpower to carry out the work round the clock and as per requirement of the site during execution of the Job.

Note: Site in-charge should be qualified Engineer, B.E. (Mechanical) and all the supervisors should have diploma in engineering.

Successful bidder has to arrange suitable mobile communication facility for BHEL site-in charge

4.1 Man power & T&P:

- Adequate manpower along with T&P should be deployed at site. All the T&P required for the work shall be arranged by the contractor and all T&P should reach the site immediately as machine is under shutdown. All the measuring instruments shall be duly tested / calibrated and valid certificate to that effect should be submitted to our Site In-charge before start of the work.

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Chapter – IV: T&Ps and MMEs to be deployed by Contractor

1. A deployment plan along with experience and name of the Site In-charge, Engineers, Supervisors, Foreman and main technicians to be submitted on per shift basis.
2. LAP-TOP with latest configuration, DVD/CD writer, its peripherals including printer-scanner and one USB Modem for Internet connectivity to be provided for BHEL site office.
3. One office boy in each shift is to be provided for BHEL site office.
4. Well experienced experts (at Least 25 years' job experience) shall be arranged by bidders.
5. Qualified safety engineer shall be arranged by bidder as per site requirement.

4.2 LIST OF TOOLS AND PLANTS TO BE ARRANGED BY CONTRACTOR

01. Taper gauge, slip gauge set, depth gauge and depth micrometer.
02. Feeler gauge sets, feeler strips of 0.03 to 0.10 mm size.
03. One set of 2-meter-long feeler gauge strips (0.05 to 1.0 mm).
04. Dial indicators New with magnetic bases (12 dials of diameter 40 mm travel – 5 mm).
05. Micrometers (inside and outside up to 300 mm, 450mm, 600mm & 1000mm).
06. Telescopic gauge (2 sets). Bevel protractor and combination sets.
07. Try square.
08. Straight edge for coupling and bearing checking.
09. Set of parallel blocks/ V blocks.
10. Vernier calipers, (150 and 300 mm), measuring steel tapes and 5 meters steel rulers.
11. Precision spirit level (with micro head).
12. 2 sets of D.E. and Ring spanners (6-36mm).
13. 2 sets of box spanners (6 to 20mm and 22-50mm).
14. Allen keys of various sizes (from 2mm. onwards).
15. D.P. Test Kit (with consumables).
16. Crowbars tin cutters, pliers (cutting plier, nose plier grip plier circlip-outside and inside).
17. Screw drivers and sledge hammers – 10 lbs – 1 lbs.
18. Adjustable wrenches, pipe wrenches and heck saws.
19. Single ended spanners (36 mm and above).
20. Flat, half round, triangular bearing scrappers-8", to 12".
21. Files flat round, half round and square, rough and smooth (sizes 6", 9" and 12").
22. Bench Grinders, straight grinders GQ4 and GQ6, Angle grinders.
23. Reamers upto 30 mm. Taper reamers.
24. Drilling machine with magnetic stand upto –30 mm with drill bits.
25. Flexible grinders with grinding stones and cutters of different Shapes and sizes, Angles Grinders and Sander machine.
26. Number punch, letter punch, centre punch and hole punches etc.....
27. Steel wire brushes, wire brush wheels, nylon wire brushes and Painting bushes.
28. Reamers and honing tools with proper jigs and fixtures for carrying out coupling hole

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

Reaming /honing.

29. Lifting devices eye bolts, D-shackles, slings of various sizes Guide rods etc.....
30. Chain pulley blocks upto 10 tons-4, 5 tons-4, 2 tons-4 pull/lift.
31. Copper/Brass rods dia. ½” to 1 ½”X450 mm.
32. Tap and die sets 6 to 36 mm.
33. Surface plate 450 X 450 mm.
34. Torch light/hand lamps with cables, 230/24 V transformer.
35. Torque wrench and torque multiplier.
36. Wooden mallet, Nylon Mallet.
37. Hand glover-asbestos, Manila rope, asbestos cloth leather and Rubber gloves.
38. Set of needle files.
39. Air blower – electric.
40. Electric drills – ¼”, ½”, and 5/8”.
41. Ball pen hammer of various sizes.
42. Gas cutting and heating set with torches regulators, hoses and cylinder minimum two sets).
43. Arc welding generator/rectifiers with regulator, cables, Electrode holders and shields, TIG welding holders.
44. Pneumatic – grinders.
45. Hose pipes for compressed air.
46. Bench vices.
47. Hydraulic jacks 5, 10, 25, 50 & 150 tons capacity and screw jacks- 5 to 10 tons.
48. Hydraulic pump for testing coolers and 500 V megger.
49. Electric switchboards with RCCB and flood light arrangements with fuse boxes and isolating switches,
Plugs and sockets.
50. In addition to above T and P contractor will be required to fabricate fixtures such as pullers etc. for removal of any other equipments related to the scope of work.
51. Pedestal fans/air coolers.-04 nos if required
52. Wooden sleepers.
53. Wooden Planks.
54. Magnifying glass.
55. Plastic helmets, Fiber helmet.
56. Gas cutting/welding goggles, grinding goggles.
57. Bearing pullers.
58. Tarpaulin.
59. Insulation testers and Meggers 500 V and 1000 V at least 1 No. each.
60. Any other T and P as per requirement and as per our General and special conditions of Contracts.
61. Digital Multimeter
62. Analogue multimeter of Motwane make

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

63.Scaffolding materials

64.heating torch-4 nos, , Pneumatic / cutter.

NOTE:

1. The above list is only indicative for work in one unit; and not exhaustive. Arrangement for any other T and P required for completion of the job shall be the responsibility of the contractor and shall be arranged by him.
2. All the tools and tackles/measuring instruments shall be duly tested/calibrated and valid certificate to that effect should be submitted to our site in-charge before the start of work.

4.3 CONSUMABLES TO BE ARRANGED BY CONTRACTOR

(The list is indicative only and not exhaustive)

01. Kerosene oil.
02. Rustolene.
03. Petrol/white Petrol/Benzene/CRC/CTC/WD-40-% litre.
04. Grease/Graphite Grease.
05. Hacksaw Blades.
06. Waste cloth/Cotton.
07. Marking/lint free cloth/Muslin.
08. Asbestos cloth/Asbestos cord.
09. Prussian blue.
10. Graphite (flaked) powder/Molykote/Mosil.
11. Cardiom compound.
12. Holdtite/shellac/Gasket sealing compound.
13. Lead wire 1.0 m/1.5 mm/0.5 mm.
14. Liquid soap.
15. Carborandum grinding paste coarse/fine/Diamond lapping paste.
16. Emery papers/Rolls.
17. Cutoff wheels.
18. Grinding wheels.
19. Oil stones, Mounted wheels, rotary cutters.
20. D. P. test chemicals.
21. Gas Cylinders for cutting/welding.
22. Chalk pieces, marking pens, t hermoschalks upto 400c
23. Insulation tape, Johnson Tapes.
24. Sander discs and wheels.
25. Polyethylene sheets.
26. Araldite, M. Seal, Instabond, Dendrite.
27. CRC 2-26, white spirit.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter – IV: T&Ps and MMEs to be deployed by Contractor

28. Electric fuse wire, cables for the connections
29. 2.5 mm² Cu cable (flexible) of 200 mtr. length.
30. Ortho phosphoric acid
31. CRC Lectra-clean.

NOTE:

The above list is only indicative for work in one unit & not exhaustive. Arrangement for any other consumables required for completion of the job shall be the responsibility of the contractor & shall be arranged by him.

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Chapter – V: Quality Requirements

QUALITY REQUIREMENT

- Various inspection/ quality control / quality assurance procedure/ methods at various stages will be as per BHEL/ customer quality control procedure/ codes/ IBR and other statutory provisions and as per BHEL Engineer's instructions.
- Preparation of quality assurance log sheets and protocols with customer's engineers, welding logs, other quality control and quality assurance documentation as per BHEL Engineer's instructions, is within the scope of work/ specification.
- A daily log book should be maintained by Area In-charge of contractor on the job incorporating erection / alignment / welding clearance /radiography / progress of work etc. and the same shall be submitted to BHEL. Also, daily reports shall be submitted to BHEL.
- All the important measurements like pre-assembly checking of alignment leveling/ centering work etc. shall be recorded in the daily log book with sketches based on BHEL drawings indicating readings/ measurements actually taken and signed by BHEL/ Customer/ Contractor representatives.
- The inspection/measuring and testing equipments should be of brand, quality and accuracy, as specified by BHEL engineer and should have valid calibration certificates traceable to national/international standards.
- Total quality is the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He will follow the instructions as per BHEL drawings and quality standards.
- The welder's performance will be reviewed from time to time as per the BHEL/ IBR standards and any welder not performing to the standards set by BHEL/ IBR standards will be removed from working, Contractor shall arrange for the alternate welders immediately.
- **STAGE INSPECTION BY BHEL / CUSTOMERS ENGINEERS**
Apart from day-to-day inspection/ stage inspection of equipments by BHEL engineers, the equipments may be checked at various stages by customer's engineers and quality assurance teams. Contractor shall arrange all labour, tools/tackles etc. for such inspections free of cost.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VI: Time Schedule

6.1 TIME SCHEDULE & MOBILIZATION

6.1.1 INITIAL MOBILIZATION:

After receipt of fax LOI, Contractor shall discuss with Project Manager / Construction Manager/BHEL Site In charge regarding mobilization. A Full-fledged team with T&P shall be mobilized **within 01 days on receipt of LOI or BHEL intimation.**

6.1.2 MOBILIZATION FOR ERECTION, TESTING, ASSISTANCE FOR COMMISSIONING, OVERHAULING ETC.

The activities for Overhauling shall be started as per directions of Site In-charge of BHEL. Contractor shall mobilize further resources (in addition to those required for activities under clause no. 6.1.1) as per requirement to commence Bearing -1 and 2 Revisioning, MOP overhauling for rectification of Axial Shift issue of Main Turbine of Unit-1 at 2x600 MW, SSTPP, MPPGCL, Dongalia.and progressively augment the resources to match schedule of the project.

OVERHAULING TIME SCHEDULE IS THE ESSENCE OF THIS CONTRACT. SUBCONTRACTOR SHOULD COMPLETE ALL WORK WITHIN 7 DAYS (FROM STOPPAGE OF BARRING TO BARRING GEAR START) OF TIGHT SCHEDULE.

As informed by MPPGCL Khandwa of U-1 is already under shutdown. Hence bidder has to mobilize the site within 01 days from the date of LOI/BHEL intimation.

Validity of Contract: - 12 Month from the date of LOA.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VII: TERMS OF PAYMENT

Payment Terms :-

1. 90% on completion of mobilization of site, completion of dismantling work, assembly work & machine put back on barring gear . **Documents like Insurance & Labour License to be submitted along with first bill.**
2. Final 10% after commissioning & synchronization of machine and also on payment of all dues and submission of all the documents like No Dues certificate from Customer/ HR clearance if required, EPF challan, Insurance, Labour License, Labour Payment sheets, proof of payment of GST, **Indemnity Bond to be submitted along with final bill** etc. (sub-contractor before leaving the site including return of T&P issued to him. All costs, claims, rentals or dues to the agency will be deducted from final bills as per BHEL norms)

Note :

1. **For final bill:** -If required documents are not submitted by bidder within 90 days from the date of commissioning, then Penalty of 1% per week of the total contract value will be levied & it is subject to maximum 5% of the contract value shall be deducted from contractor 's bill.
2. Penalty of 1% per day of the total contract value will be levied for improper mobilization of man power and 1% per day for T & P and consumables separately subject to maximum 5% of the contract value shall be deducted from contractor 's bill
3. While submitting the invoices, Bidder should mention their Bank Account No. on each of their invoices for the purpose of making e-payment.
4. The bill due for payment shall be submitted to the Engineer in-charge of BHEL **along with documentation of Refund of Retention Money Format No. F24 (Rev 00)** (revised format is attached in VOL I BCD 'forms and procedure') at site for necessary verification and processing through proper channel.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: TAXES AND DUTIES

TAXES, DUTIES, LEVIES (Rev 14 dated 09/10/2020)

- 1) All taxes excluding GST, GST Cess & BOCW Cess but including, Royalties, fees, license, deposits, commission, any State or Central Levy and other charges whatsoever, if any, shall be borne by you and shall not be payable extra.
- 2) Any increase of the taxes excluding GST, GST Cess & BOCW Cess, at any stage during execution including extension of the contract shall have to be borne by the contractor. Quoted/ accepted rates/ price shall be inclusive of all such requirements. Please note that since GST on output will be paid by BHEL separately as enumerated below, your quoted rates/ price should be after considering the Input Credit under GST law at your end.
- 3) **GST** :
The successful bidder shall furnish proof of GST registration. GST along with Cess (as applicable) legally leviable & payable by the successful bidder as per GST Law, shall be paid by BHEL. Hence Bidder shall not include GST along with Cess (as applicable) in their quoted price.
- 4) GST charged in the Tax Invoice/Debit note by the contractor shall be released separately to the contractor only after contractor files the outward supply details in GSTR-1 on GSTN portal and input tax credit of such invoice is matched with corresponding details of outward supply of the contractor and has paid the GST at the time of filing the monthly return
- 5) E-invoicing under GST has been implemented with effect from 1st October 2020 for all the taxable persons having turnover more than the threshold limit in any preceding financial year from 2017-18 onwards. Therefore, for all the taxable persons falling under the purview of E-invoice, it is mandatory to mention a valid unique Invoice Reference No. (IRN) and QR code as generated from E-Invoicing portal of the Government for the purpose of issuing a valid Tax Invoice. Only an E-invoice issued in the manner prescribed under rule 48(4) of CGST Rules shall be treated as valid invoice for reimbursement of GST amount.
If the successful Bidder is not falling under the purview of E-Invoicing then he has to submit a declaration in that respect along with relevant financial statements.
- 6) Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules (Section 31 of GST Act & Rules referred there under) wherein the 'Bill To' details will as below:
BHEL GSTN – As per **Annexure -1**
NAME – Bharat Heavy Electricals Limited
ADDRESS – Site address
- 7) Bidder to immediately intimate on the day of removal of Goods (in case of any supply of goods) to BHEL along with all relevant details and a scanned copy of Tax Invoice to below email ids to enable BHEL to meet its GST related compliances :-
Email id --- to be intimated later on.
In case of delay in submission of the abovementioned documents on the date of dispatch, BHEL may incur penalty /interest for not adhering to Invoicing Rules under GST Law. The

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: TAXES AND DUTIES

same will be liable to be recovered from the successful bidder, if such delay is not attributable to BHEL.

- 8) In case of raising any Supplementary Tax Invoice (Debit / Credit Note) Bidder shall issue the same containing all the details as referred to in Section 34 read with Rule 53.
- 9) Bidder shall note that in case GST credit is delayed/ denied to BHEL due to delayed / non receipt of goods and /or tax invoice or expiry of the timeline prescribed in GST Law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from the vendor along with interest levied / leviable on BHEL, as the case may be.
- 10) Bidder shall upload the Invoices raised on BHEL in GSTR-1 within the prescribed time as given in the GST Act. Bidder shall note that in case of delay in declaring such invoice in your return and GST credit availed by BHEL is denied or reversed subsequently as per GST Law , GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from the bidder along with interest levied / leviable on BHEL.
- 11) Way Bill: Successful Bidder to arrange for way bill / e-waybill for any transfer of goods for the execution of the contract.

The Bidder has to make their own arrangement at their cost for completing the formalities, if required, with Issuing Authorities, for bringing materials, plants & machinery at site for execution of the works under this contract, Road Permit/ Way Bill, if required, shall be arranged by the contractor and BHEL will not supply any Road Permit/ Way Bill for this purpose.

- 12) **New taxes and duties:** -Any New taxes & duties, if imposed subsequent to due date of offer submission as per NIT & TCN, by statutory authority during contract period including extension, if the same is not attributable to you, shall be reimbursed by BHEL on production of relevant supporting document to the satisfaction of BHEL. However, you shall obtain prior approval from BHEL before depositing new taxes and duties.

Benefits and/or abolition of all existing taxes must be passed on to BHEL against new Taxes, if any, proposed to be introduced at a later date.

In case any new tax/levy/duty etc. becomes applicable after the date of bidder's offer but before opening of the price bid, the bidder must convey its impact on his price duly substantiated by documentary evidence in support of the same before opening of the price bids. Claim for any such impact after opening the price bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

- 13) For transportation work, bidder shall declare in his quotation whether he is registered under GST, if yes, whether he intends to claim GST on forward charge basis. In absence of this declaration, BHEL will proceed further with the assumption that bidder intends not to claim GST on forward charge basis. However, in case of GST registered transporter, the amount to the extent of goods and service tax will be retained till BHEL avails the credit of GST.

TECHNICAL CONDITIONS OF CONTRACT (TCC)

Chapter-VIII: TAXES AND DUTIES

Further, transporter shall issue tax invoice which inter alia includes gross weight of the consignment, name of the consigner and the consignee, registration number of vehicle in which the goods are transported, details of goods transported, details of place of origin and destination, GSTIN of the person liable for paying tax whether as consigner, consignee or goods transport bidder, and also containing other information as mentioned under rule 46.

- 14) TDS under Income Tax shall be deducted at prevailing rates on gross invoice value from the running bills unless exemption certificate from the appropriate authority/ authorities is furnished.
- 15) TDS under GST shall be deducted at prevailing rates on applicable value from the running bills.
- 16) TCS under Income Tax 1961 has been implemented with effect from 1st October 2020 for every seller having turnover more than threshold limit during financial year immediately preceding financial year in which the sale of goods is carried out, who receives any amount as consideration for sale of any goods of the value or aggregate of such value exceeding threshold limit other than export of goods or who is already covered under other provision of section 206C, collect from the buyer, TCS as per applicable rates of the sale consideration exceeding threshold limit subject to following conditions
- B
- Buyer shall be as per clause (a) of section 206C- (1H)
 - Seller shall be as per clause (b) of section 206C- (1H)
 - No TCS is to be collected, if the seller is liable to collect TCS under other provision of section 206C or the buyer is liable to deduct TDS under any provision of the Act and has deducted such amount.

If Successful Bidder is falling under the purview of TCS then he has to submit a declaration in that respect along with relevant financial statements before the start of work or if bidder is falling under preview of TCS during the work in progress then bidder is compulsorily required to submit relevant financial statement in the beginning of the respective FY.

For TCS claim, vendor has to submit relevant documents required as per Income Tax Act.

- 17) Refer Annexure - 2 for BOCW Act & Cess Act.

ANNEXURE-1

State wise GSTIN no.s of BHEL

Sl. No	Projects under state	GSTIN
1	Andhra Pradesh	37AAACB4146P7Z8

BHEL-PSWR

Technical Conditions of Contract – Volume I A (Part I: Contract Specific Details)

E-Tender Specification Number: BHE:PW:NGP:PUR:RNG-KNDW-3247

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Chapter-VIII: TAXES AND DUTIES

2	Bihar	10AAACB4146P1ZU
3	Chhattisgarh	22AAACB4146P1ZP
4	Gujarat	24AAACB4146P1ZL
5	Jharkhand	20AAACB4146P5ZP
6	Madhya Pradesh	23AAACB4146P1ZN
7	Maharashtra	27AAACB4146P1ZF
8	Orissa	21AAACB4146P1ZR
9	Telangana	36AAACB4146P1ZG

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter-IX: Schedule of Rates and Quantities

Sch no.	Description of Work	UOM	QTY	Percentage w.r.t total lumpsum price quoted in the price bid
1	BEARING -1 AND 2 REVISIONING INCLUDING MOP OVERHAULING FOR RECTIFICATION OF AXIAL SHIFT ISSUE	LS	01	94.5%
2	REPLACEMENT OF BEARING (OPTIONAL)	Nos.	01	5.5%
TOTAL Lump-sum value to be quoted by the bidder in VOL II Price Bid			100%	