

**RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD  
SURATGARH STPS (2X660 MW)**

**TECHNICAL SPECIFICATION**


**FOR**

**MOTOR BOAT**

**SPECIFICATION NO: PE-TS-392-563-A-007**



**BHARAT HEAVY ELECTRICALS LTD  
POWER SECTOR PROJECT ENGINEERING MANAGEMENT  
NOIDA – UTTAR PRADESH  
INDIA**

	<b>TECHNICAL SPECIFICATION FOR MOTOR BOAT FOR 2X660 MW SURATGARH</b>	Specification no.: <b>PE-TS-392-563-A007</b>
		Rev. 00
		Date: AUG 2014
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#### **Document Management System**

Bidder to note that BHEL reserve the right for drg/doc submission through web based Document Management System. Bidder would be provided access to the DMS for drg/doc approval and adequate training for the same. Detailed methodology would be finalized during the kick-off meeting. Bidder to ensure following at their end.

Internet explorer version – Minimum Internet Explorer 7  
Internet speed – 2 mbps (Minimum preferred)  
Pop ups from our external DMS IP (124.124.36.198) should not be blocked.  
Vendor's Internal proxy setting should not block DMS application's link (<http://124.124.36.198/wrenchwebaccess/login.aspx>”).



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### SCOPE OF ENQUIRY/INTENT OF SPECIFICATION

- 1.1 This specification includes, but not limited to design, engineering, material selection, manufacturing and assembly, painting, inspection, testing at manufacturer's works, packing, forwarding and transportation to site of **2 no. MOTOR BOAT** and necessary accessories.
- 1.2 The contractor shall be responsible for providing all material, equipment & services, which are required to fulfil the intent of ensuring operability, maintainability, reliability and complete safety of the complete work covered under this specification, irrespective of whether it has been specifically listed herein or not. Omission of specific reference to any component / accessory necessary for proper performance of the equipment shall not relieve the responsibility of providing such facilities to complete the supply of the crane and its accessories.
- 1.3 It is not the intent to specify herein all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.
- 1.4 The extent of supply under the contract includes all items shown in the drawings, notwithstanding the fact that such items may have been omitted from the specification or schedules. Similarly, the extent of supply also includes all items mentioned in the specification and /or schedules, notwithstanding the fact that such items may have been omitted in the drawing.
- 1.5 The general term and conditions, instructions to tenderer and other attachment referred to elsewhere are made part of the tender specification. The equipment materials and works covered by this specification is subject to compliance to all attachments referred to in the specification. The bidder shall be responsible for and governed by all requirements stipulated herein.
- 1.6 While all efforts have been made to make the specification requirement complete & unambiguous, it shall be bidders' responsibility to ask for missing information, ensure completeness of specification, to bring out any contradictory / conflicting requirement in different sections of the specification and within a section itself to the notice of BHEL and to seek any clarification on specification requirement in the format enclosed under Vol-III of the specification. In absence of any such clarifications, in case of any contradictory requirement, the more stringent requirement as per interpretation of Purchaser/Customer shall prevail and shall be complied by the bidder without any commercial implication on account of the same. Further in case of any missing information in the specification not brought out by the prospective bidders as part of pre-bid clarification, the same shall be furnished by Purchaser/ Customer as and when brought to their notice either by the bidder or by purchaser/ customer themselves. However, such requirements shall be binding on the successful bidder without any commercial & delivery implication.
- 1.7 The bidder's offer shall not carry any sections like clarification, interpretations and /or assumptions.
- 1.8 Deviations, if any, should be very clearly brought out clause by clause in the enclosed schedule; otherwise, it will be presumed that the vendor's offer is strictly in line with NIT specification.
- 1.9 In case all above requirements are not complied with, the offer may be considered as incomplete and would become liable for rejection.
- 1.10 Unless specified otherwise, all through the specification, the word contractor shall have same meaning as successful bidder /vendor and Customer/ Purchaser/Employer will mean BHEL and /or customer including their consultant as interpreted by BHEL in the relevant context.
- 1.11 Other requirements  
Successful bidder shall furnish detailed erection manual for each of the equipment supplied under this contract at least 3 months before the scheduled erection of the concerned equipment / component or along with supply of concerned equipment / component whichever is earlier.

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Document approval by customer under Approval category or information category shall not absolve the vendor of their contractual obligations of completing the work as per specification requirement. Any deviation from specified requirement shall be reported by the vendor in writing and require written approval. Unless any change in specified requirement has been brought out by the vendor during detail engineering in writing while submitting the document to customer for approval, approved document (with implicit deviation) will not be cited as a reason for not following the specification requirement.

In case vendor submits revised drawing after approval of the corresponding drawing, any delay in approval of revised drawing shall be to vendor's account and shall not be used as a reason for extension in contract completion.

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PROJECT INFORMATION

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**TATA CONSULTING ENGINEERS LIMITED**

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**RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage-V,  
Unit # 7 & 8 at Suratgarh, Rajasthan**  
GENERAL PROJECT INFORMATION

SHEET 1 OF 3

1.0	Owner	Rajasthan Rajya Vidyut Utpadan Nigam Ltd., Jaipur
2.0	Consulting Engineer	TATA Consulting Engineers Ltd. 73/1, St. Marks Road, Bangalore – 560 001  Tel : 080 – 6622 6000 Fax : 080 – 22274874
3.0	Location of the plant	Prabat Nagar, Suratgarh Sriganganagar district, Rajasthan.
4.0	Latitude and longitude	Latitude : 29 deg. 10 min. N Longitude : 74 deg.01 min. E
5.0	Elevation above mean sea level	186 m (approximate)
6.0	<b>Climatic conditions</b>	
6.1	Temperatures : Monthly basis	
	Mean of daily max.	32.8 deg.C (in the month of May)
	Mean of daily min.	17.6 deg.C (in the month of Jan)
6.2	Temperatures : Annual basis	
	Mean of daily max.	32.3 deg.C
	Mean of daily min.	19.6 deg.C
	Highest temperature recorded	50 deg.C
	Lowest temperature recorded	(-) 2.8 deg.C
	Design Ambient Temperature for Electrical Equipment design	50 deg C
6.3	Relative humidity	Varies between 21% and 81%
6.4	Annual average rain fall	312 mm
6.5	Annual mean wind speed :	4 km / hr.
7.0	Wind load	

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GENERAL PROJECT INFORMATION

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	Calculations for wind effect shall be in accordance with IS:875-1987(Part-3) taking into account the following:	
	a) Basic wind speed = 47 m/sec	
	b) Factor K1 = 1.07	
	c) Category of terrain = Category 2	
	d) K3 – as per IS 875	
8.0	Seismic data (As per IS: 1893 latest issue)	
	a) Zone	Zone II
	Designs & design coefficients shall be based on IS 1893:2002	
	Design condenser cooling water inlet temperature	33 Deg C
9.0	Auxiliary power supply:	
	Auxiliary electrical equipment to be supplied against this specification shall be suitable for operation on the following system:	
	a) For motors rated 160 kW and below.	415V AC, 3-phase, 3-wire effectively earthed.
	b) For motors rated above 160 kW and up to 1500 kW	6600V AC, 3-phase, 3-wire, 50 Hz, non-effectively earthed
	c) For motors rated above 1500kW	11000V AC, 3-phase, 3-wire, 50 Hz, non-effectively earthed
	d) For motor control centres	415V AC, 3-phase, 3/4-wire effectively earthed.
	e) DC motor starters, DC solenoids, DC alarm control and protection	220 V DC, 2-wire unearthed
	f) AC control & protective devices	110 V 1 phase, 50Hz, 2 wire AC supply. The single phase 110V AC supply shall be derived by VENDOR by providing 415V / 110 V Control transformers of adequate rating with MCCB / MCB on both the primary and secondary sides.
	g) Uninterrupted power supply	230 V, 1-phase, 50 Hz, 2-wire, AC

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GENERAL PROJECT INFORMATION

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	supply (For all instrumentation and control system equipment and solenoid valves)
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- g) Lighting fixtures and space heaters 240 V, 1 phase, 2 wire, 50Hz, solidly earthed system
- h) Construction supply 415 V, 3 phase, 4 wire, 50Hz AC supply with neutral lead solidly earthed.
- i) The above voltages may vary as follows :

All devices shall be suitable for continuous operation over the entire range of voltage and frequency indicated below without any change in their performance.

AC supply

Voltage variation  $\pm 10\%$   
Frequency variation  $\pm 5\%$

Combined voltage & frequency variation 10%

DC supply

Voltage variation  $+10\%$  ,  $-15\%$

- j) For instrument and control system of steam generator and steam turbine generator.

230 V  $\pm 5\%$  AC UPS, 1-phase, 50 Hz, 2-wire. The 24 V DC required for control system shall be generated from this UPS.

10.0 All the electrical equipment shall be designed for 50° C reference ambient temperature.

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**1.0.0. SCOPE OF WORK****1.1.0. SUPPLIES**

Equipment and services to be furnished by the bidder for two no. Motor boat with accessories as per the details given in data sheet A. Any equipment / accessories not specified in the specification but required to make the Motor boat unit complete and efficient shall also be under the bidder's scope of work.

**1.2.0 Maintenance Tools and Tackles**

A complete unused new set of special purpose tools, tackles and accessories along with detailed instructions and maintenance manual shall be supplied. Each tool and wrench shall be stamped so as to be identified easy for its use. The tools shall be supplied in steel toolbox and with a copy of instruction manual. The items supplied shall be of the best quality and specially protected against rusting in tropical climate.

Note: - Motor boat shall be supplied with one set of tool and tackles with O&M manual in the toolbox separately.

**1.3.0. Inspection and Testing**

1.3.1. Inspection and testing at Manufacturer's works

Shop inspection and tests will be carried out at manufacturer's works.

Bidder shall submit check list/quality plan to be carried out at works at various stages.

**1.4.0. SURFACE PREPARATION, PAINTING & COLOUR SCHEME**

1.3.1. Surface Preparation and the Painting of the Motor boat shall be as per manufacturer standard.

However, vendor will have to submit its painting procedure for approval during detail engineering to BHEL.

1.3.1.1 Necessary touch up paint of sufficient quantity for coating at site shall be provided by the vendor

1.3.1.2 All exposed surfaces should be made free from oil and grease.

**1.5.0. Drawing / design document for submission after award of contract**

A. For Approval

- a) G.A. drawing / Manufacturer's catalogues of Motor boat showing all dimensions, materials of construction and other parameters.
- b) Detailed Technical data sheet of Motor boat duly filled in format given by BHEL along with this Technical Specification.
- c) Quality Plan/ check list
- d) O.M. Manual

Drawing no.s and drawing titles shall be as per Annexure –V, section-C, volume II-B of this specification

**2.0.0. Number of drawing and documents for submission**

The number of prints / copies required for various drawing and documents are listed in Annexure –IV, section-C, volume II-B of this specification.

**3.0.0. Deviations**

If the proposal submitted has got any deviation from the technical stipulations in the tender document, bidder shall tabulate the same in the appropriate "Schedule of Deviations" furnishing full particular of such deviations. Deviations are to be furnished with mention to specific clause Number. Notes / comments etc. are not acceptable. If there are no deviations from the tender document, bidder shall indicate so. Reasons / explanations for such deviations shall be furnished

**4.0.0. Performance Guarantee**

Motor boat along with its drives, controls and other accessories shall be guaranteed for the rated capacity against the rated speed of motions and for the service conditions specified.

The bidder shall have the full responsibility for the safe and efficient operation of the Motor boat with associated accessories as a single unit. If the shop/site performance tests indicate the failure of any of the components to achieve the guaranteed performance, the deficiency shall be made good at bidder's cost.

**5.0.0. Make of Sub - Vendor items.**

Bidder shall submit the 'List of Makes of Bought-out items' for review / approval

**6.0.0. Drawing & Documents to be submitted along with Tender**

As per annexure VI.

**ANNEXURE-IV**

**DRAWING/DOCUMENT DISTRIBUTION LIST**

All documents & drawings shall be in English and in metric units

SI		TCE	RRVUNL-EC	RRVUNL-SITE	BHEL SITE	PMG BHEL	PEM/ UNITS/ PSER	REMARKS
1	Master list of drawings / doc (duly indicating sch of submission)	Soft copy	Soft copy	-	-	Soft copy	S	
2	Drawings / doc for Approval/Information (First Submission)	Soft copy	Soft copy	-	-	Soft copy	S	
3 R	Return with comments/approval	S Soft	t copy	-	-	Soft copy	Soft copy	
4	Drawings / Documents for approval (second & subsequent submissions till approval)	Soft copy	Soft copy	-	-	Soft copy	S	
5	Drawings / documents for distribution (Approved by RRVUNL, in cat. A or G)	Soft copy	1 print (by PSER facility)+ Soft copy	1 print (by PSER facility)+ Soft copy	6 prints + Soft copy	Soft copy	S	
6	Erection Drawings / documents	- 1	print+ Soft copy	3 prints + Soft copy	6 prints + Soft copy	Soft copy	S	
7 FIN	AL Erection / Installation Manual for distribution	- 1	prints+ Soft copy	3 prints+ Soft copy	3 prints+ Soft copy	Soft copy	S	
8	As built Drawings / documents	- 1	print+ Soft copy	3 prints+ Soft copy	2 prints+ Soft copy	Soft copy	S (As applicable)	
9 Operation &	Maintenance Manual	- 1	prints + Soft copy	3 prints+ Soft copy	2 prints+ Soft copy	Soft copy	S	
10 Performance &	functional Guarantee test reports	- 1	prints + Soft copy	3 prints + Soft copy	2 prints + Soft copy	Soft copy	S	
11	Type Test Certificate	Soft copy	1 prints+ Soft copy	3 prints+ Soft copy	2 prints+ Soft copy	Soft copy	S	
12 Commissioning &	Performance Procedure Manual	- 1	prints+ Soft copy	3 prints+ Soft copy	2 prints+ Soft copy	Soft copy	S	
13 Project Completion	Report	- 1	prints+ Soft copy	3 prints+ Soft copy	2 prints+ Soft copy	Soft copy	S	

NOTES:

1. The above schedule of submission does not include Docs/Drgs. of quality assurance/inspection and delivery/dispatches.
2. Date of submitting soft copy is to be taken as date of submission.
3. S – Source for generation of document.



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## ANNEXURE-V

**DRAWINGS/ DOCUMENTS TO BE SUBMITTED AFTER AWARD OF CONTRACT**

The successful bidder shall submit the following drawings / documents during detail engineering for customer's approval /information:

Sl. No.	BHEL DRG.NO	DRAWING TITLE	Approval category	SUBMISSION SCHEDULE - WEEK NUMBER FROM DATE OF LOI
1	PE-VO-392-563-17000-A001	Inspection Check List / Manufacturing Quality Plan of motor boat	A	4
2	PE-VO-392-563-17000-A002	Data sheet of motor boat with painting & packing details and Catalogue/boat layout	A	4
3	PE-VO-392-563-17000-A003	O & MANUAL	A	6

## NOTE

- 1 BHEL/CUSTOMER SHALL COMMENT /APPROVE THE DRAWINGS WITHIN 10 DAYS OF RECEIPT OF DRAWINGS
- 2 VENDOR SHALL RESUBMIT THE REVISED DRAWINGS WITHIN 7 DAYS OF RECEIPT OF COMMENTS.
- 3 INCOMPLETE DRAWINGS/DOCUMENTS SHALL NOT BE TREATED AS SUBMITTED.
- 4 MANUFACTURING SHALL BE STARTED ON RECEIPT OF CAT II APPROVED DRAWINGS.



**TECHNICAL SPECIFICATION FOR**  
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**2X660 MW SURATGARH**

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TWO MOTOR BOAT (ONE PER EACH COMPARTMENT) SHALL BE PROVIDED FOR RAW WATER RESERVOIR ALGAE/WEED CONTROL.

S.N.	Description	Specific requirement
1	Quantity	Two (2) no.s
2	Engine Rating	40 HP
3	Fuel type	Diesel
4	Hull	FRP or Aluminium
5	Boat capacity	6 passenger (min)
6	Net load	1200 Kg
7	Life jackets	12 nos. conforms to SOLAS rules
8	Air tubes	12 nos. conforms to SOLAS rules
9	Speed	10 km/hr with variable speed
10	Control box	Provided
11	Starting	Manual + Electric
12	Dimension	As per Manufacturer's standard
13	Painting	Manufacturer standard
14	First aid kit	Provided
15	Search light (LED type) :	2 nos. with battery shall be provided for each boat
16	Accessories for weed removal	Rake/shovel with tray shall be provided for manual removal of algae/weed, detail shall be as per manufacturer standard.
17	Chains/rope to tie up boat when not in used	To be provided

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<p>1.0 <b>GENERAL</b></p> <p>1.1 The following terms used in this specification shall also mean to cover other terms as shown below:</p> <p style="padding-left: 40px;">OWNER-OWNER / PURCHASER / USER</p> <p style="padding-left: 40px;">CONSULTANT-CONSULTANT/ENGINEER / INSPECTION AGENCY VENDOR - VENDOR / CONTRACTOR / FABRICATOR / SUPPLIER</p> <p style="padding-left: 40px;">SUB-VENDOR - SUB-VENDOR / SUB-CONTRACTOR / SUB-FABRICATOR / SUB-SUPPLIER and all such agencies</p> <p>1.2 The Plant and Equipment covered by this Contract shall be subjected to inspection and testing. The VENDOR shall provide all services to establish and maintain quality of workmanship in his Works and that of his SUB-VENDORS to ensure the mechanical accuracy of components, compliance with approved drawings, identification and acceptability of all materials, parts and Equipment.</p> <p>1.3 For supply of systems, VENDOR shall, at the start of the 'Contract', furnish a total list of items in their scope of work. This list, giving a brief description of the item, quantity, names of probable SUB-VENDORS, and a blank column for agency for final approval of drawings / data sheets, shall be submitted for approval by CONSULTANT. (The blank column shall be filled by CONSULTANT.) The list shall be submitted within two weeks from the date of LOI.)</p> <p>1.4 For systems and major items such as pressure/load bearing items, machineries etc., the VENDOR shall furnish quality plan giving details of checks / tests to be conducted by them on material, process, sub-assembly and assembly. These shall include requirements as prescribed in the applicable specifications, codes and statutory requirements. The quality plan shall be reviewed by the OWNER / CONSULTANT and the stages to be witnessed and verified shall be indicated by the OWNER /CONSULTANT in the quality plan and approved.</p> <p>1.5 The VENDOR shall give the CONSULTANT written notice of any material being ready for testing as per format enclosed. The clear notice period shall be seven (7) days for local inspection and fifteen (15) days for outstation inspection. Such tests shall be to the VENDOR'S account except for the expenses of the CONSULTANT. The CONSULTANT, unless the inspection of the tests is virtually waived, shall fix a date for inspection with the VENDOR and attend such tests within fifteen (15) days of the date on which the Equipment is notified as being ready for test / inspection failing which, the VENDOR may proceed with the tests and shall forthwith forward to the CONSULTANT duly certified copies of tests in triplicate. If the VENDOR fails to offer the Equipment for inspection as per the agreed date, he is liable to pay for the time and expenses for the infructuous visit of the CONSULTANT.</p> <div style="text-align: right; border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">ISSUE R0</div>		

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<p>1.6 In all cases where inspection and tests are required whether at the premises or Works of the VENDOR or of any SUB-VENDOR or at laboratory, the VENDOR, except where otherwise specified, shall provide free of charge all facilities such as labour, materials, electricity, fuel, water, stores, test bed, apparatus and instruments, laboratory tests etc. as may be required by the CONSULTANT or his authorised representative to carry out effectively such tests of the Equipment in accordance with the 'Contract' and shall give facilities to the CONSULTANT or to his authorised representative to accomplish testing.</p> <p>1.7 The OWNER or the CONSULTANT shall at all working hours have access to all parts of the VENDOR'S and his SUB-VENDOR'S factory where the items of the Plant are being prepared, for carrying out inspection activities as deemed necessary. A set of the relevant latest approved drawings with approval marking of the CONSULTANT and drawings for proprietary items shall be made available by the VENDOR to the OWNER or the CONSULTANT, for reference during inspection.</p> <p>1.8 In the case of stage inspection hold points, the VENDOR shall proceed from one stage to another only after the component is inspected by the OWNER or his representative and written permission given to proceed further. The same procedure shall be adopted for any rectifications / repairs suggested by the OWNER or the CONSULTANT.</p> <p>1.9 The OWNER or the CONSULTANT shall have the right to inspect any machinery, material, structures, Equipment or workmanship furnished or used by the VENDOR and may reject any which is defective or unsuitable for the use and purpose intended, or which is not in accordance with the intent of the Contract. The VENDOR, upon demand by the OWNER or the CONSULTANT, shall remedy or replace at the VENDOR'S expense such defective or unsuitable items of the Plant, or the OWNER or the CONSULTANT may, at the expense of the VENDOR, remedy or replace such defective or unsuitable items of the Plant.</p> <p>1.10 All principal mill test reports, vendor inspection / tests reports, test certificates and test curves shall be supplied for all inspection / tests carried out including other records such as stress relieving charts, radiographic charts and other non-destructive testing records in accordance with the provisions of the Contract, duly certified by the main VENDOR. The OWNER or the CONSULTANT shall reserve the right to call for certificates of origin and test certificates for all raw material and Equipment at any stage of manufacture.</p> <p>1.11 The CONSULTANT shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the VENDOR of any non-conformance pertaining to all or any Equipment and workmanship which in his opinion are not in accordance with the 'Contract'. The VENDOR shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall confirm in writing to the CONSULTANT giving reasons therein that no modifications are necessary to comply with the 'Contract'.</p>		
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<p>1.12 When the factory tests and documentation have been satisfactorily completed at the VENDOR'S or SUB-VENDOR'S Works, the CONSULTANT shall issue acceptance note / shipping release note / certificate to this effect within fifteen (15) days after completion, but if the tests are not witnessed by the CONSULTANT, the certificate or comments thereof shall be issued within fifteen (15) days of the receipt of the VENDOR'S test certificate by the CONSULTANT. Failure of the CONSULTANT to take such an action shall not prevent the VENDOR from proceeding with the Work. The completion of these tests or the issue of the certificates shall not bind the OWNER to accept the Equipment should it, on further tests after erection, be found not to comply with the 'Contract'.</p> <p>1.13 None of the Plant and the Equipment to be furnished or used in connection with the Contract shall be despatched until shop inspection, satisfactory to the OWNER or the CONSULTANT has been made. However, such shop inspection and/or certification shall not relieve the VENDOR of his responsibility for furnishing the Plant and the Equipment conforming to the requirements of the Contract nor prejudice any claim, right or privilege which the OWNER or the CONSULTANT may have because of the use of defective or unsatisfactory items. Should the OWNER or the CONSULTANT waive the right to inspect any item, such waiver shall not relieve the VENDOR in any way from his obligation under the Contract. In the event of the OWNER or the CONSULTANT'S inspection revealing poor quality of goods, the OWNER or the CONSULTANT shall be at liberty to specify additional inspection procedures, if required, to ascertain the VENDOR'S compliance with the Equipment Specifications.</p> <p><b>2.0 SUB-ORDERS</b></p> <p>2.1 In order to facilitate the inspection of bought-out materials and Plant, the VENDOR shall submit for approval, three (3) copies of all sub-orders placed by him as soon as they are issued. Copies of any drawings referred to in the sub-order shall also be submitted, unless otherwise agreed by the OWNER or the CONSULTANT.</p> <p>2.2 The sub orders and drawings referred to above shall include all components which are subjected to electrical and mechanical pressure or stress when the Plant is in operation, and also auxiliaries and spares which are to be directly despatched to Site from the SUB-VENDOR'S Works.</p> <p>2.3 All sub-orders of the main VENDOR and SUB-VENDORS shall clearly be marked with the main VENDOR'S name and the OWNER'S name and 'Contract' reference. They shall include the following statement:</p> <p>2.3.1 "The Plant or the Equipment which is the subject of this order shall comply in every respect with the requirements of the CONSULTANT'S technical specifications and shall be subject to inspection and tests to the satisfaction of the CONSULTANT and ourselves".</p> <div style="text-align: right; border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">ISSUE R0</div>		

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<p>2.3.2 For the purpose of this clause, inter-works orders shall also be treated as sub-orders. It is obligatory on the VENDOR that he advises his SUB-VENDOR of the pertinent clauses in this Specification when ordering bought-out Plant, Equipment or materials. In particular, the VENDOR shall advise very SUB-VENDOR that he is required to supply design calculations, drawings, inspection reports and test certificates strictly in accordance with this specification and technical information for inclusion in the Instruction Manual as specified in Section-E. The SUB-VENDORS should also be reminded that they shall include with their offer all tools and appliances necessary for proper maintenance and all spare parts in accordance with Section-E of the Specification. Itemised prices of the recommended spare parts shall be submitted together with the appropriate part numbers and drawings.</p> <p>2.5 Sub-ordering / sub-contracting for major items such as pressure / load bearing items, machinery etc. can be done only with the approval of the OWNER / CONSULTANT.</p> <p>3.0 <b>MATERIAL TESTS</b></p> <p>3.1 In the event of the OWNER or the CONSULTANT being supplied with the certified particulars of tests which have been carried out for the VENDOR by the supplier of material, the OWNER or the CONSULTANT may, at his own discretion, accept the same as proper evidence of compliance with the requirements of appropriate specifications for the materials.</p> <p>3.2 The VENDOR is to provide test pieces as required by the CONSULTANT to enable him to determine the quality of material supplied under the 'Contract'. If any test piece fails to comply with the requirements, the CONSULTANT may reject the entire lot of material represented by the test piece.</p> <p>3.3 Critical materials used in manufacture of the Equipment and construction of the Plant covered by the 'Contract' may also be subjected to one or more of the non-destructive tests (NDT) as called for in the Specification or as mutually agreed. Salvaging of material due to unacceptable defect is to be attempted by the VENDOR only after getting specific concurrence from the OWNER or the CONSULTANT and according to the approved procedures.</p> <p>4.0 <b>WELDING</b></p> <p>4.1 All welding involved in construction and fabrication of the Plant and items covered under the 'Contract' shall be carried out in accordance with procurement specifications and applicable codes.</p> <p>4.2 Welding procedures and welders' qualifications shall be approved by the CONSULTANT. Where applicable, welders shall be tested as detailed in codes specified for pipe welding, vessel welding and structural welding and appropriate to the corresponding weld position using test pieces of appropriate parent metal</p>		
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<p>to be used on the job. The CONSULTANT shall have the right to have any welder re-tested at any time during the 'Contract'.</p> <p>4.3 Recommendations of applicable codes shall be followed for non-destructive tests, wherever applicable.</p> <p>4.4 Copies of all welding procedures, procedure qualification records, welders' performance qualification certificates, post-heating / stress relieving records, NDT records and other test results shall be made available upon request of the CONSULTANT.</p> <p>5.0 <b>FABRICATION/INSPECTION</b></p> <p>Fabrication / Inspection procedures for vessels, heat exchangers, pipes, tubes, valves, etc. Shall be in accordance with procurement specifications, quality plan, applicable codes or any other approved equal.</p> <p>6.0 <b>TESTS AT MANUFACTURER'S WORKS</b></p> <p>6.1 <b>General</b></p> <p>The tests at Works shall include electrical, mechanical and hydraulic tests in accordance with the appropriate clauses of Statutory Regulation, relevant codes and standards and approved drawings / specifications and in addition any test called for by the OWNER or the CONSULTANT to ensure that the Plant being supplied fulfils the requirements of the Specifications. The VENDOR shall carry out all the shop tests and inspections specified under individual items of the Equipment in Section-D, in addition to those normally required as per codes / standards. For items not covered by any code or specifically mentioned in the Specifications, the tests are to be agreed with by the CONSULTANT. If considered necessary by the OWNER or the CONSULTANT, multi-part assemblies shall be fully erected and tested in the Works prior to packing and despatch to the Site.</p> <p>6.2 <b>Test Certificates</b></p> <p>Test certificates including test records, performance curves and balancing certificates shall be supplied according to the Distribution Schedule. All the tests shall be carried out in accordance with the provisions of the 'Contract'.</p> <p>All test certificates must be endorsed with sufficient information to identify the material or the Equipment to which the certificates refer, and must carry at the top right hand corner the identification of the OWNER and the 'Contract'.</p> <p>6.3 <b>Calibration</b></p> <p>All instruments used for critical measurement such as pressure gauges for leak tests, instruments for measuring performance parameters; instruments for</p>		
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<p>precision dimension measurements shall have valid calibration certificates traceable to national standards. This means that the calibrating agency engaged by the VENDOR shall use instruments which are in turn calibrated by Government approved agencies and such an information shall be recorded in the calibration certificate issued by the calibrating agency by giving the certificate number, date and date of validity of the certificate given by the Government approved agency.</p> <p style="text-align: center;"><b><u>FORMAT FOR INSPECTION REQUEST FROM VENDOR</u></b></p> <p>To Rajasthan Rajya Vidyut Utpadan Nigam Limited</p> <p style="text-align: right;">Attn: Mr. (PROJECT COORDINATOR)</p> <p>Dear Sirs,</p> <p>Items detailed below are ready for inspection. Please arrange inspection and confirm the date.</p> <ol style="list-style-type: none"> <li>1. Client/ End user :</li> <li>2. Project :</li> <li>3. Client's order Ref. :</li> <li>4. TCE's Ref. :</li> <li>5. Sub-order Ref. :</li> <li>6. Sub-Contractor's name &amp; full address :</li> <li>7. Place of inspection (Full address) :</li> <li>8. Contact person, Phone, Fax and Telex Nos. :</li> <li>9. Description of item &amp; Qty. :</li> <li>10. Billing Schedule No. :</li> <li>11. Nature of inspection required :</li> </ol> <div style="text-align: right; border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">ISSUE R0</div>		

SPEC.NO.  
TCE.5750A-H-500-001

**TATA Consulting Engineers Limited**

VOLUME II  
SECTION – E 4

**RRVUNL, 2 x 660 MW, Super-Critical TPS, Stage-V,  
Unit # 7 & 8 at Suratgarh, Rajasthan**  
SHOP INSPECTION AND TEST PROCEDURES

SHEET 7 OF 7

12. Proposed date(s) :

13. Weekly holiday :

We confirm that the items have been fully inspected / tested by us, all stages of inspection as per quality plan have been done by TCE and us and all material test certificates, Q.C. records and test reports and valid calibration reports of measuring / testing instruments with traceability to national level are ready with us.

Thanking you and awaiting your confirmation,

Yours faithfully,

Note: 1. Following clear notice periods (date of receipt at Client's office to date of inspection) are required:

- (a) Local Inspection - 7 days
- (b) Outstation Inspection - 15 days

2. Weekly Holidays for Client - Saturday & Sunday

cc: TCE  
cc: Sub-Vendor

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SPEC. NO. TCE.M4-906	<b>TATA CONSULTING ENGINEERS LIMITED</b>	SECTION: E
	<b>PACKING, MARKING AND TRANSPORT INSTRUCTIONS FOR EQUIPMENT</b>	SHEET 1 OF 5
1.0	<b><u>PACKING</u></b>	
1.1	All equipment and material shall be protected for ocean shipment, inland transport, and storage at the site, according to applicable Indian Standards (IS) and to the instructions given in this specification.	
1.2	The PURCHASER/CONSULTANT may require inspecting and approving the packing before the items are despatched. However, the VENDOR/CONTRACTOR shall be entirely responsible for ensuring that the packing is suitable for the mode of shipment and such inspection will not exonerate the VENDOR/CONTRACTOR from any loss or damage due to faulty packing.	
1.3	The VENDOR/CONTRACTOR shall be responsible for any damage to the equipment and materials during transit due to improper and inadequate packing.	
1.4	Any material found short upon opening the intact packing cases shall be supplied by the VENDOR/CONTRACTOR at no extra cost to the PURCHASER.	
1.5	Only packages constructed out of sound material and of dimensions proportional to the size and weight of contents shall be used.	
1.6	All packing cover and packing material shall become the property of the PURCHASER.	
1.7	In the case of large and bulky equipment, the VENDOR/CONTRACTOR shall be responsible for ascertaining transport limitations and supply the equipment in the minimum number of components or sub-assemblies, within the framework of transport limitations.	
1.8	For ocean transport, containers shall be used as far as possible. Dimensions of packages and kind of packaging must be chosen to fully utilise the size of containers.	
1.9	All equipment shall be protected for the entire period of despatch, storage and erection, against corrosion, incidental damage due to vermin, sunlight, rain, high temperature, humid atmosphere, rough handling in transit and storage in open including possible delays in transit. Material and equipment shipped across the sea shall be packed to withstand without damage, the effects of saline atmosphere. All machined and plated parts shall be protected with anti-rust grease. Precautions shall be taken to protect shafts and journals where they rest on wooden or other supports likely to contain moisture. At such points, wrappings impregnated with anti-rust composition or vapour phase inhibitors shall be used. These shall have sufficient strength to resist chafing and indentation due to the movement, which is likely to occur in transit. The protective wrappings and impregnation shall last for a minimum period of three months or transport time whichever is more.	
1.10	All openings in the equipment shall be tightly covered, plugged or capped to prevent foreign material from entering into the equipment.	
1.11	The contents of the packages shall be sealed in thick polythene sheets. The inside walls of the packages shall be lined with waterproof material to protect	
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	<b>PACKING, MARKING AND TRANSPORT INSTRUCTIONS FOR EQUIPMENT</b>	SHEET 2 OF 5

the equipment from damage due to dust and moisture.

- 1.12 Adequate provision of skids or pallets shall be made to keep the packages above the ground drain water. Crates and other large containers should have drain holes in the bottom to prevent collection of water within the packing. This is especially important where the cargo itself is subjected to condensation (cargo sweat).
- 1.13 Silica gel or approved equivalent moisture absorbing material in small cotton bags shall be placed and tied at various points on the equipment, wherever necessary.
- 1.14 All cases shall be provided with suitable cut-outs, closed by bolted wooden planks to facilitate inspection by custom authorities. Waterproof transparent papers shall be provided at the cut-out locations to prevent water ingress into the casing through the cut-out.
- 1.15 The contents of the package shall be punched on non-corrosive metal plate and nailed to the package on a prominently visible place. If the number of items in the package is too many, a typed list in transparent waterproof bag shall be kept inside a galvanised sheet steel pocket nailed on to the outside of package at prominently visible location.
- Copies of the packing list, in triplicate, shall be forwarded to the PURCHASER prior to despatch. All items of material shall be clearly marked for easy identification against the packing list.
- 1.16 Fragile materials shall be securely braced within the package or otherwise amply fastened and packed to prevent shifting or rattling. Soft non-hygroscopic packaging materials shall be placed between the hard packing materials and the fragile equipment. Articles, which do not completely fill the selected package/container, must be cushioned, braced, fastened or blocked to prevent damage to the article itself or destruction of the package. Inner bracing or blocking must be such that the content's weight is distributed over interior surfaces rather than concentrated at one or two points.
- 1.17 Components containing glass shall be carefully covered with shock absorbing protective material such as expanded polystyrene ('Thermo Cole').
- 1.18 All flanges, etc., which are prone to scratching shall be provided with either metal or wooden or plastic blanks bolted in place. Metal blanks should have a minimum thickness of 3 mm and wooden blanks should be made from two layers of wood, each of 10 mm thickness, nailed together with the grain of each layer located at right angles to one another.
- 1.19 Loose material, e.g. bolts, nuts, etc. shall be packed and sealed in polythene bags with proper tagging and packed in cases.
- 1.20 All spare parts shall be packed and treated for long storage conditions at site.

2.0 **MARKING**

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	<b>PACKING, MARKING AND TRANSPORT INSTRUCTIONS FOR EQUIPMENT</b>	SHEET 3 OF 5
2.1	<p>All packages shall be clearly, legibly and durably marked with uniform block letters (preferably with waterproof paint) on at least three sides with:</p> <ul style="list-style-type: none"> <li>(a) Purchaser's Name and destination address</li> <li>(b) Purchase Order/Contract Number and Date</li> <li>(c) Vendor's/Contractor's or Sub-Vendor's/Sub-Contractor's Name</li> <li>(d) Consignment Serial Number</li> <li>(e) Overall Dimensions</li> <li>(f) Net and gross weights</li> <li>(g) Sign showing 'side up'</li> <li>(h) Sign showing 'fragile' marks in case of delicate equipment</li> <li>(i) Sign showing slinging and sling position</li> <li>(j) Any handling and unpacking instructions, if considered necessary</li> <li>(k) Identification markings relating to the appropriate shipping documents</li> <li>(l) In case of spare parts, each spare part shall be clearly marked and labelled on the outside of its packing with its description and catalogue/ part number and item number of main equipment to which it relates.</li> </ul>	
2.2	<p><b><u>ERECTION MARKS</u></b></p> <p>All equipment comprising multi part assemblies, e.g. steel frameworks, piping, etc., shall be marked with identifying numbers and/or letters corresponding to those of the approved drawings or material lists. These erection marks shall be clearly readable.</p> <p>Colour banding to an approved code shall be employed to identify members of similar shape or type but of different strengths or grades.</p>	
3.0	<p><b><u>TRANSPORT</u></b></p>	
3.1	<p>No equipment or material shall be despatched without prior consent (acceptance certificate) of the PURCHASER/CONSULTANT or his representative. On receipt of the acceptance certificate, the equipment shall be packed up and made ready for despatch either on Free On Board (FOB), (Free Alongside Ship (FAS), Free On Road (FOR), Free On Truck, (FOT), Free Alongside Road (FAR), or free alongside Truck (FAT) basis as per the PURCHASE ORDER/CONTRACT. If it is on FOB basis, the VENDOR/ CONTRACTOR is responsible for loading the equipment on the board of ship. On FAS basis, another agency takes over from the VENDOR/CONTRACTOR</p>	
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for loading. The same applies to FOR, FOT and FAR, FAT.

- 3.2 Depending upon the equipment and the mode of transport the VENDOR/ CONTRACTOR may propose to deliver the equipment in container or as Break Bulk i.e. in components or sub-assembly form.
- 3.3 In the event of VENDOR/CONTRACTOR proposing to deliver the equipment in Break Bulk form, he shall furnish full particulars of the quantity and approximate size of each item. All sub-assemblies shall be match-marked to facilitate assembly at site.
- 3.4 In case of ocean shipment, the VENDOR/CONTRACTOR shall send an advance 'Advice of Shipment' to the PURCHASER and site separately, so as to reach at least seven (7) days in advance for foreign supply and three (3) days in advance for domestic supply. This advice shall state the Cost including Freight and Insurance (CIF) value of the consignment, the details of the transport and the probable date of its departure and arrival. Copies of packing list shall also be sent along with the advance intimation.
- 3.5 The VENDOR/CONTRACTOR shall ship the equipment on behalf of the PURCHASER by the first available vessel belonging to a recognised shipping line. He shall ensure that the freight rates charged are not higher than the conference rates applicable to the shipping route at the time of shipment and all rebates and refunds available for such consignments are duly taken into account. The VENDOR/CONTRACTOR shall be responsible for the correct appraisal of freight rates (structural or machinery as the case may be), weights and volumes. In no case, the PURCHASER will pay any warehouse or wharf charges.
- 3.6 Immediately after the shipment has been effected, the shipping documents, comprising Bill of Lading, Freight Invoice, FOB/FAS/FOR/FOT/FAT/FAR Invoice, Packing List, Certificate of Origin, Letter to Insurers and Certificates of Inspection shall be issued by the VENDOR/CONTRACTOR in accordance with the instructions of the PURCHASER/CONSULTANT. These documents shall reach the PURCHASER before the arrival of ship. Responsibility for delays, loss or damages of shipping documents shall rest with the VENDOR/ CONTRACTOR.
- 3.7 In case of inland despatch by rail or truck, similar equivalent procedures as applicable to rail or truck transportation shall be adopted.
- 3.8 All Equipment manufactured by the VENDOR/CONTRACTOR shall be under his charge. The PURCHASER shall arrange for insurance coverage during shipment and till delivered at site, if necessary.

4.0 **TRANSPORT OF ELECTRICAL EQUIPMENT AND INSTRUMENTATION  
ITEMS**

- 4.1 Transformers rated 2000 kVA and less shall be shipped filled with oil. Transformers rated above 2000 kVA shall be shipped without oil but with the

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	<b>PACKING, MARKING AND TRANSPORT INSTRUCTIONS FOR EQUIPMENT</b>	SHEET 5 OF 5

tank filled with nitrogen or equivalent inert gas. A gas cylinder with suitable reducer connection and pressure gauge shall be supplied. These accessories shall become the property of the PURCHASER. The required quantity of oil shall be supplied separately in non-returnable drums.

- 4.2 Switchgear cubicles and instrument control panels shall be packed and shipped in separate and convenient sections. All withdrawable equipment like circuit breakers and circuit breaker arc-chutes shall be packed and shipped separately. All relays and panel-mounted instruments shall be packed and shipped separately with their operating mechanisms temporarily arrested from movement during transport.
- 4.3 Batteries shall be shipped to site in dry, uncharged condition. Appropriate quantity of acid of the correct specific gravity shall be shipped separately in non-returnable porcelain jars packed in steel wire baskets.
- 4.4 Cables shall be shipped on non-returnable drums, adequately braced, and with cable ends adequately sealed to prevent ingress of moisture.

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PROJECT:- 2X660 MW SURATGARH

PACKAGE:- MOTOR BOAT

TENDER ENQUIRY REFERENCE:-

NAME OF VENDOR:-

SL NO	VOULME/SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATIO N/ TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF WITHDRAWAL OF DEVIATION	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWL OF DEVIATION (POSITIVE/ NEGATIVE)	REASON FOR QUOTING DEVIATION
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**TECHNICAL DEVIATIONS**


**COMMERCIAL DEVIATIONS**


**PARTICULARS OF BIDDERS/ AUTHORISED REPRESENTATIVE**

NAME	DESIGNATIONS	SIGN & DATE

**NOTES:**

- For self manufactured items of bidder, cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
- For directly dispatchable items, cost of withdrawal of deviation will be applicable on the basic price including taxes, duties & freight.
- All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format.
- Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
- Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable.
- Bidder shall furnish price copy of above format along with price bid.
- The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
- Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
- For deviations w.r.t. Payment terms, Liquidated damages, Firm prices and submission of E1/ E2 forms before claiming 10% payment, if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VIII of GCC. Rev-06 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy
- Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
- All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
- Cost of withdrawal is to be given seperately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.
- In case nature of cost of withdrawl (positive/negative) is not specified it shall be assumed as positive.
- In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.

## **Annexure-VI**

**VENDOR HAS TO SUBMIT ONLY FOLLOWING DOCUMENTS ALONG WITH THE OFFER, FOR TECHNICAL EVALUATION OF THE BID:-**

**1.0 NO DEVIATION CERTIFICATE' – Clearly mentioning that bidder has considered 'No - Deviation' from the technical specification provided by BHEL.**

OR

DEVIATION Sheet in the deviation schedule furnished, indicating clause wise technical deviation if any.

**2.0 Unpriced format, duly mentioned 'Quoted' against each Sl.no. below each column.**

**3.0 Duly signed and stamped Compliance cum Confirmation form.**

**Note1:- Any other standard document/ details furnished by the bidder i.e. Data sheet / GA Drawing/ QAP etc. shall not be taken in to consideration for evaluation.**

**Note 2:- Bidder to note that if the bidder does not submit the documents mentioned in Sl. No. 1.0 ,2.0, and 3.0 along with their offer then their offer is liable to be rejected.**



TITLE: <b>TECHNICAL SPECIFICATION</b>  <b>COMPLIANCE CUM CONFIRMATION CERTIFICATE</b>	SPEC. NO.: PE-TS-392-563-A-007
	VOLUME: III
	SECTION:
	REV. NO. 0      DATE AUG 14

**COMPLIANCE CUM CONFIRMATION CERTIFICATE**

The bidder shall confirm compliance with following by signing/ stamping this compliance certificate (every sheet) and furnish same with the offer.

- a) The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusions other than those mentioned under "exclusion" in section C and those resolved as per 'Schedule of Deviations', if applicable, with regard to same.
- b) There are no other deviations w.r.t. specifications other than those furnished in the 'Schedule of Deviations'. Any other deviation, stated or implied, taken elsewhere in the offer stands withdrawn unless specifically brought out in the 'Schedule of Deviations'.
- c) Bidder shall submit QP in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/ CUSTOMER approval & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. Inspection/ testing shall be witnessed as per same apart from review of various test certificates/ Inspection records etc. This shall be within the contracted price with no extra implications to BHEL after award of the contract.
- d) All drawings/ data-sheets/ calculations etc. submitted along with the offer shall be considered for reference only, same shall be subject to BHEL/ CUSTOMER approval in the event of order.
- e) The offered materials shall be either equivalent or superior to those specified in the specification & shall meet the specified/ intended duty requirements. In case the material specified in the specifications is not compatible for intended duty requirements then same shall be resolved by the bidder with BHEL during the pre - bid discussions, otherwise BHEL/ Customer's decision shall be binding on the bidder whenever the deficiency is pointed out.  
  
For components where materials are not specified, same shall be suitable for intended duty, all materials shall be subject to approval in the event of order.
- f) The commissioning spares shall be supplied on 'As Required Basis' & prices for same included in the base price itself.
- g) All sub vendors shall be subject to BHEL/ CUSTOMER approval in the event of order.
- h) The EQUIPMENT'S functional guarantees shall stand valid till at least eighteen (18) months from PERFORMANCE GUARANTEE test of equipment as per technical specification or commercial terms and conditions, whichever is later.
- i) In the event of order, all the material required for completing the job at site shall be supplied by the bidder within the ordered price even if the same are additional to approved billing break up, approved drawing or approved Bill of quantities. This clause will apply in case during site commissioning additional requirements emerges due to customer and/ or consultant's comments. No extra claims shall be put on this account.
- j) Schedule of drawings submissions, comment incorporations & approval shall be as stipulated in the specifications. The successful bidder shall depute his design personnel to BHEL's/ Customer's/ Consultant's office for across the table resolution of issues and to get documents approved in the stipulated time.
- k) As built drawings shall be submitted as and when required during the project execution.
- l) The bidder has not tempered with this compliance cum confirmation certificate and if at any stage any tempering in the signed copy of this document is noticed then same shall be treated as breach of contract and suitable actions shall be taken against the bidder.