

GENERAL TECHNICAL CONDITIONS

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PREAMBLE	PES-100-900	03

1.0 The tender document contains three (3) volumes. The bidder shall meet the requirements of all the three volumes.

1.1 VOLUME-1 (CONDITIONS OF CONTRACT)

This consists of four parts as below:-

- Volume-I A : This part contains instructions to bidders for making bids to BHEL.
- Volume-I B : This part contains general commercial conditions of the tender and includes provision that vendor shall be responsible for the quality of item supplied by their sub-vendors.
- Volume-I C : This part contains special conditions of contract.
- Volume-I D : This part contains commercial conditions for erection and Commissioning site work, as applicable.

1.2 VOLUME-II TECHNICAL SPECIFICATIONS

Technical requirements are stipulated in Volume-II, which comprises of :-

- Volume-II A : General Technical Conditions
- Volume-II B : Technical Specification including Drawings, if any.

1.2.1 VOLUME-II B

This volume is sub-divided into following sections:-

- Section- A : This section outlines the scope of enquiry.
- Section- B : This section provides “Project Information”.
- Section- C : This section indicates technical requirements specific To the contract, not covered in Section-D.
- Section- D : This section comprises technical specifications of Equipment complete with data sheet A,B and C.

Data Sheet-A: Specifies data and other requirements Pertaining to the Equipment.

Data Sheet-B: Specifies data to be filled by the bidder (Data Sheet-B is contained in Volume-III).

Data Sheet-C: Indicates data/documents to be furnished After the award of contract as per agreed schedule by the Vendor (as applicable).

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1.2.2 VOLUME- III TECHNICAL SCHEDULES

This volume contains technical schedules and Data Sheets-B, which are to be duly filled by the bidder and the same shall be furnished with the technical bid as per instructions given in Document No.PES-100-901 in Volume-III.

- 2.0 The requirements mentioned in Section-C/Data Sheets-A of Section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-D.

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DRAWINGS/DOCUMENTS AND VENDOR'S DRAWINGS/DOCUMENTS LIST	PES-100-910	03

1. All drawings submitted by the vendor including those submitted at the time of bid shall be in sufficient detail to indicate the type, size, arrangement, weight, breakdown for packing and shipment, the external connection, fixing arrangement required, the dimensions required for installation and interconnections with other equipment and materials, clearance and spaces required between various portions of equipment and any other information necessary for efficient functioning of the equipment.

The vendor shall be responsible for developing detailed drawings to adopt his equipment and materials to the requirements indicated in the tender specification. Number of copies of the following as required from the bidder in each bid and indicated in Section "C" of Technical Specification Vol. IIB :

- i. Data Sheet-B
 - ii. Catalogues and other technical literature
 - iii. Drawings
 - iv. Quality Plan
2. The vendor shall provide the purchaser with the following drawings and data as per agreed schedule. (The drawings/data shall be preferably on PC to the maximum extent possible and floppy of the same to be submitted if applicable.).
 - i. Data Sheets – B duly revised conforming to accepted bid
 - ii. Outline drawing of all equipment together with load data including dynamic load and factors and sufficient overall dimensions to enable the purchaser to design foundations and structures and associated equipment.
 - iii.
 - a. Vendor drawings/document Schedule (PEM:6042)*
 - b. Schedule of Equipment Manufacture Despatch & Shipment to Site (PEM-6026)*
 - c. Inspection Schedule (PEM:6030)*

*Refer Volume-III for formats
3. Within the stipulated time period as per Vendor's drawing/documents Schedule, the Vendor shall submit for approval of the Purchaser, the following drawings and technical data:
 - i. P&I diagrams/dimensional layout drawings of the plant and equipment to be supplied under the contract and all certified data relating to the design of foundation structures to enable the Purchaser to arrange for construction of the necessary foundations and civil works.

All information regarding material and size of anchor bolts, nuts, sleeves, inserts and supports which shall have to be embedded in concrete shall be furnished in the detailed foundations drawings.
 - ii. Dimensional drawings showing individual equipment being supplied under the contract, method and sizes of connections to the Purchaser's other equipment giving also the limits of variations of the dimensions.
 - iii. All efficiency and characteristic curves under the specification.

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- iv. Schematic drawings of all wirings, connections and interlocking diagrams showing the points where the connections have to be made by the Purchaser.
 - v. Necessary structural and other calculations and data required for demonstrating fully that all parts of the equipment to be furnished shall conform to the provision and intent of the contract.
4. Drawings submitted by Vendor shall be in standard sizes in accordance with Indian Standard i.e. A.O. A1, A2, A3 and A4 and shall have title block and numbering scheme and provision to record BHEL/PEM numbering scheme corresponding to his drawings as agreed with the Purchaser. Metric units shall be adopted unless otherwise specified. The graphical symbols to be adopted shall be duly approved by the Purchaser.
 5. Customer/Consultant involvement in the approval of drawings/quality Plan, if any, is indicated Sec-C Technical Specification. Volume-IIB.
 6. The vendor shall submit number of copies of each drawing for approval as indicated in Section “C” of Technical Specifications Volume IIB. Approval of Vendor drawings shall be accorded in four (4) categories.

Category-I	Approved
Category-II	Approved with comments as noted (Forward final drawing).
Category-III	Not approved
Category-IV	Reference Drawings

Only one print of duly approved/commented drawings shall be returned to the Vendor within the period as per agreed schedule. Vendor drawings stamped – “For Reference only” shall be accorded category-IV approval as stated above.

Drawings, approved in Category-I need not be resubmitted for approval and the vendor can proceed with manufacture/fabrication without departing from approved drawings.

Drawings approved in Category-II/III shall be resubmitted after incorporating all the comments for getting category-I approval. Further revision shall be shown by number, date and revision details in the revision block.

7. In case the vendor is unable to incorporate certain comments, he shall clearly state the reasons for the same and obtain approval for the same. Any work if performed or material ordered by the vendor on the basis of drawings stamped under category-III will be at the risk of the vendor.

However, vendor may proceed with fabrication/procurement work on the basis of Category-II approval, ensuring compliance with the comments.

8. If at any time before the completion of the work changes are made necessitating revision of approved drawings, the vendor shall make such revisions and proceed in the same routine as per the original approval.

9. Final Drawings

As built drawings/RTF/Floppy shall be submitted as per the number of copies indicated in Sec. C of Technical specifications Vol. II-B.

10. Erection Drawings/Documents (Specifying erection procedures and facilities for erection etc.) shall be submitted by the vendor or his sub-vendor, wherever required, but these shall not be required to be approved unless otherwise instructed by the purchaser.

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11. Purchaser/Inspection Agency or their authorized representative shall have the right at all reasonable times to inspect at the factory of the vendor or his sub-vendors, all drawings including shop drawings.

12. SUBMISSION OF FINAL DRAWINGS/FLOPPY

Upon receipt of the prints which have been marked “Approved” or “Approved with comments as noted. Forward final drawings”, the vendor shall furnish as per agreed schedule number of additional prints as indicated in sec. C of volume-IIB, of each of the drawings and reproducible transparency/floppy after corrections, if any, to the Engineer.

- 12.1 The vendor shall make any changes in the design, with prior approval of the Engineer which are necessary to make the equipment conform to the provisions and intent of contract, without additional cost to the Purchaser, (Approval of Vendor’s drawings by purchaser shall not relieve the vendor of any part of his obligations as per the Contract or Vendor’s responsibility for the correctness and completeness of his drawings).

The details to be furnished shall include but not restricted to the following:

- i. Final plans and layout giving complete details against the above mentioned arrangement plans including foundation plans.
- ii. Assembly, sub-assembly and sectional drawings of equipment as applicable.
- iii. Complete cabling drawings, giving details of cables required, terminal details, layout of trenches etc.
- iv. Detailed wiring diagrams and arrangements of conduits for wiring various control and instruments up to the required points.
- v. Shop drawings of equipment requiring repair or replacements.
- vi. P&I diagrams
- vii. PG Test procedure, O&M Manual, Field Quality Plans etc.

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TITLE	SPECIFICATIONS NO.	REV. No.
QUALITY ASSURANCE SYSTEMS AND QUALITY PLAN	PES-100-911	03

1.0 QUALITY ASSURANCE SYSTEMS

1.1 The vendor shall establish document and maintain effective quality Assurance Systems as outlines in recognized Codes such as ISO, B.S. 5750, ASME section-VIII Division 1, etc. to ensure that all actions are performed in a planned systematic and documented manners so as to provide confidence that the equipment and/or services provided by him conform to the specification requirements and would perform satisfactorily in service over its life period.

1.2 The quality assurance systems of the vendor shall generally cover the following:

- a. An Organization Chart for the whole organization and qualification data for Bidder's key personnel.
- b. An organization chart for the quality department.
- c. Responsibility, Authority and Accountability of the Quality Department.
- d. Design and Engineering control
- e. Quality control of incoming material including sub-vendor's selection, Quality control at source and on receipt at works, segregation of rejected material, storage and issue of accepted materials for further processing.
- f. Quality Control of process such as welding, heat treatment, non-destructive testing etc.
- g. Quality control during manufacture and assembly.
- h. Control, segregation and disposal of non-conformances and system for corrective and preventive action.
- i. Preservation, packing and despatch control.
- j. Handling and analysis of Customer's complaints
- k. Calibration and control of instruments and gauges and other testing equipment
- l. Quality audit, maintenance of records.
- m. Quality control during storage, erection and commissioning.

1.3 Quality Assurance systems adopted by the vendor shall be explained by the vendor in the form of a Quality Assurance Manual.

2.0 QUALITY PLAN

2.1 The Quality Plan is a document, which presents in a tabular form the Quality control checks exercised by the vendor during the various stages of manufacture and despatch in order to meet the requirements of this specification. This plan details, step by step, the operations, components and characteristics being controlled, method of exercising such controls, the importance (criticality) of the control (critical major or minor) with respect to the functioning of the item the extent to which the controls are exercised (100% samples, one per heat, etc.). Acceptance norms for the characteristics, method of maintaining records thereof as a proof of having exercised the control successfully, the agency responsible for performing and witnessing the checks and for verifying the records thereof.

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The bidders shall furnish the Quality Plan in the format enclosed in Volume-III. In case the Standard Quality plans are included in Volume IIB, the bidder shall furnish his Quality Plan strictly in line with the same. Instructions for filling the Quality Plan format are given on the back of the format.

The Quality Plan shall be discussed and finalized with all bidders before price bid opening. The state(s), where the Customer/Consultant would like to be associated for witnessing/verification would be indicated by the Purchaser in the quality Plan before approval.

Copies of Bidder's/Bidder's Collaborators catalogues/drawings/standards/specifications/procedures etc. as mentioned in reference document column of the Quality Plan shall be furnished for approval.

- 2.2 In the Quality Plan, the bidder shall give in detail, the quality control checks exercised by him during the various stages of manufacture such as:
- a. All bought out items and incoming material checks carried out at sources and on receipt.
 - b. Process of manufacture i.e. welding, heat treatment etc.
 - c. Manufacture of various components, sub-assemblies and assembly.
 - d. Final Inspection and Testing including Performance Test at shop
 - e. Surface preparation and painting
 - f. Packing, Marking and Despatch.

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TITLE	SPECIFICATIONS NO.	REV. No.
WORKMANSHIP, ENGG. REQUIREMENTS AND CODES AND STANDARDS	PES-100-912	03

- Equipment furnished shall be complete in all respects with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or needed for erection, commissioning and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the respective specifications, unless included in the list of exclusions. Terminal Points as clearly defined in the drawings together with the list of inclusions and exclusions in the contract documents shall define the scope of contract.

The vendor shall not be eligible for any extra payment in respect of such mounting, fitting, fixtures and accessories, which are needed as mentioned above but not included in the contract specifications.

- All similar components/parts of similar equipment supplied shall be interchangeable with one another.
- The vendor shall ensure that the requirements of the latest editions of codes/standards specified and the applicable statutory regulations are satisfied in all respects. Other Internationally acceptable standards which ensure equipment or higher performance shall also be accepted. In case of conflict between such codes/standards and the specifications, the later shall govern. Interpretation of BHEL in such matters shall be final and binding.
- Material shall be of best Quality. Workmanship shall comply with the requirements of the Tender in all respects and shall be to the entire satisfaction of the Purchaser. The offer shall be deemed to be in full agreement with the specification given in the tender schedule and no claim on account of non-examination or in-efficient examination of the specification will be considered.
- All materials used in the manufacture of the equipment shall be selected from the best available for the purpose considering strength, durability, and best engineering practices. Liberal factors of safety shall be used throughout the design and specially in the design of all parts subject to alternating stress or shocks.

All the work shall be performed and completed as per the best modern practices in the manufacture of high-grade equipment, notwithstanding any omission in the specification.

- Castings shall be free from blow holes, flaws, cracks or other defects and shall be smooth, close grained and of true forms and dimensions. No plugged or filled up holes or other defects will ordinarily be allowed. Such castings are liable to be rejected. However, the vendor may rectify minor casting defects by welding or other methods in accordance with the standard manufacturing practices, provided such rectification shall not effect the efficient working of plant/equipment and prior approval of BHEL shall be obtained for the same.
- The guaranteed performance figures of equipment/systems are stipulated in Volume-IIB. In case these are not stipulated in Volume-IIB, the bidder shall furnish the same, which shall be mutually agreed upon with the successful bidder.
- The vendor shall be responsible for the accuracy of all engineering data/document furnished to BHEL as well as selection and design of the appropriate equipment to meet the required duties specified.

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The review and/or approval of BHEL in respect of the above, shall not be construed by the Vendor as limiting any of his responsibilities and obligations under the contract.

9. Within one (1) month from the date of issue of letter of intent, the Vendor shall provide one (1) copy of all the codes and standard applicable for this contract at no extra cost to the purchaser as agreed mutually.
10. All approved documents shall form part of the contract documents. All works shall be performed in strict conformity with the same.
11. Equipment shall be provided with eyebolts etc. for mounting any lifting devices and shall also be suitably stiffened at all lacking locations, wherever applicable.
12. As and when required vendor shall attend co-ordination meetings at his own cost.
13. Drawing shall include all installation and detailed piping drawings. All piping of 80 mm and larger size shall be routed in detail and smaller pipes shall be shown schematically or by isometric drawings.
14. Noise Level: The equivalent “A” weighted sound level measures at a distance 1.5 m above floor level in elevation and 1 M horizontally from the base of any equipment furnished under specification expressed in decibel to a reference of 0.0002 micro bar shall not exceed 85 dbA, unless otherwise specified in Volume IIB.
15. Protective Guards – Suitable guards shall be provided for protection of personnel on all exposed rotating and/or moving machine parts. All such guards shall be designed for easy installation and removal for maintenance purpose.
16. Responsibility for the quality of sub-vendor items/components shall be of the vendor on whom the order is placed for the package.
17. Platforms/Ladders – Suitable platforms/ladders shall be provided for ease of accessibility to equipment for operation and maintenance purposes.
18. Statutory and Regulatory Requirements. The Vendor shall ensure compliance to statutory and regulatory requirements as applicable.

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TITLE	SPECIFICATIONS NO.	REV. No.
SHOP INSPECTION & TESTS	PES-100-913	03

1. The bidder shall abide fully by all the clauses of Shop Inspection and Tests covered in Technical Specification Volume-IIB. The Purchaser reserves the right to consider any stage of inspection/test as a “Hold Point”, beyond which work shall not proceed without acceptance of that stage.
2. Bidder shall indicate in the Quality Plan, the “Performance Test(s) at Shop” which is normally carried out by him. If any performance test(s) at shop are stipulated in Technical Specification Volume-IIB the same shall also be carried out by the Vendor to ensure compliance with the performance characteristics specified.
3. Items covered under this contract shall be subjected to Inspection/Testing and Quality Surveillance. The Inspection Agency shall at reasonable times, have access to vendor’s Works, Quality Control records. All reasonable facilities required for carrying out the inspection and Testing efficiently, shall be provided by the Vendor, free of cost. The method of inspection shall be agreed upon in the Approved “QUALITY PLAN” which shall form part of the Contract. Wherever possible, Standard Quality Plan, by way of minimum requirements, are included in the bid specification as a guideline.
4. The minimum Inspection/Testing requirements shall conform to relevant Codes/Standards as well as Statutory Regulations applicable, whether or not specifically mentioned in the specification, in addition to those normally carried out by the Vendor.
5. Unless the Inspection/Test is waived, the Inspection Agency shall attend the Inspection/Test within fifteen (15) days of the date of receipt of written notice (PEM-6046 Inspection Request) from the Vendor, failing which the Vendor may proceed with the Inspection/Test and shall forward duly certified copies of the Inspection/Test Reports. After successful completion of the Inspection/Test or receipt of Vendor’s Test reports mentioned above, the Inspection Agency shall issue within fifteen (15) days, the Acceptance Certificates.

Wherever Customer/Consultant “Hold Points” are indicated in the approved Quality Plan(s) and additional ten (10) days notice shall be given for Inspection/Testing.

6. Before sending written notice to the Inspection Agency, the Vendor’s own Inspection Staff should have fully inspected/tested the item. If the visit of the Inspection Agency proves to be futile on account of the item not being ready for Inspection/Testing or the same being rejected to reasons which could otherwise, have been detected during Vendor’s own Inspection/Test, the cost incurred by Inspection Agency on such visits shall be borne by the Vendor.
7. Approval or passing of Inspection/Test and thereby issue of the acceptance Certificates or waive of Inspection by the Inspection Agency shall not relieve the Vendor of his responsibilities and obligations under the contract and also shall not bind the Purchaser to accept the item should it, on further tests after receipt at destination, erection/commissioning be found not complying with the Contract.
8. All necessary documents such as mill test reports, test certificates, test curves, stress relieving charts, radio graphic films and other non-destructive tests, copies of the welding procedure, welder qualification certificates and other documents in support of adherence to Quality Plan shall be furnished to the Inspection Agency. The Quality Assurance

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Document consisting of certified copies of all of the above compiled sequentially by the Vendor shall be sent to the Purchaser prior to despatch.

9. The Inspection Schedule (PEM-6030 in Volume-III) shall be submitted by the Vendor after receipt of LOI.
10. The Vendor shall procure raw material/components/sub-assemblies only from approved sub-vendors with adequate manufacturing and testing facilities. In case of procurement from Sole Selling Agents/Authorised Dealers, supporting correlated test certificates of manufacture shall be furnished. In the absence of (such certificates, tests as per the governing specifications shall be arranged in independent test house/laboratory approved by Purchaser.
11. The Vendor shall provide test pieces as required by Inspection Agency to enable him to determine the Quality of Material supplied under the Contract. If any test piece fails to comply with the requirements the Inspection Agency may reject the whole material represented by the test piece.
12. In the vent of inspection revealing poor quality of goods, purchaser shall be at liberty to specify additional Inspection/Test, required to ascertain Vendor's compliance with the equipment specification. In the event of rejection by Purchaser or Vendor, salvage of materials is to be attempted by the Vendor only after getting specific concurrence from the Inspection Agency and this shall be according to the approved procedures.
13. All welding shall be carried out in accordance with applicable codes or approved equal. Welding procedure and Welder's Qualification shall be got approved, if specified in Technical Specification Volume-II B. Welding consumables used shall be approved by the Inspection Agency.

Approved methods of radiographic, ultrasonic or other non-destructive testing as applicable shall be used for the welding of critical components/assembly.
14. If considered necessary by the Inspection Agency, multiple assemblies shall be fully erected and tested at the Vendors work prior to packing and despatch to Site.
15. For all items, "Type Test Certificates" as per governing specification shall be furnished. In the absence of the same, such type tests shall be arranged at Vendor's works in the presence of the Inspection Agency or in independent Test house/laboratory approved by Purchaser.
16. None of the item shall be despatched without the receipt of "Quality Surveillance Note" (QS Note) from the Inspection Agency as well as the written approval in the form of Material Despatch Clearance Certificate (MDCC) unless specifically agreed.

The affixing of Inspection Stamp on the item by the Inspection Agency is for the purpose of identification only and shall not be considered as a token of acceptance.
17. The above conditions are equally applicable to the agency on whom the Vendor has sub ordered as it shall be construed as if the works are manufactured or assembled at Vendor's own premises of works.

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RATING AND NAME PLATES	PES-100-914	03

- Each item of the Plant/Equipment shall be provided with a Name Plate or Label designating the service of the particular equipment as well as a Rating Plate displaying manufacturer's name, equipment, ratings, type, model number, tag number etc.
- Rating/Name Plates shall be of non-corrodible material preferably chromium plated steel. The inscriptions shall be engraved in black or as otherwise specified in Section C/D.
- In case of indoor equipment like circuit breakers, starters, etc, the Rating/Name Plate shall be of plastic material with suitably coloured lettering engraved on the back.
- The Rating/Name Plate shall be of adequate size ensuring clarity of inscriptions. The size, shape and the inscriptions shall be approved by the Engineer/Purchaser.
- The Rating/Name Plate shall be screwed to the equipment in a conspicuous position.
- All such Rating/Name Plates, Instruction Plates, lubrication charts etc. shall be in English if specified.

Alternatively two separate plates, one with Hindi and the other with English inscriptions may be provided.

In case Name Plates are required in any other language other than English, the same shall be specified and Vendor shall make arrangement for supplying these at no extra cost.

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TITLE	SPECIFICATIONS NO.	REV. No.
PACKING AND MARKING INSTRUCTIONS	PES-100-915	03

1.0 **GENERAL**

- 1.1 All Equipment/Material shall be protected for ocean shipment (wherever applicable), inland transport, outdoor storage during transit, carriage at the site, strictly according to the instructions given in this specification as well as the Vendor's Packing and Marking Procedure" and delivery as approved by BHEL or conforms to the specified requirements.
- 1.2 The Vendor shall be responsible for any loss or damage or deterioration to Equipment/Material, during transit, handling and storage due to inadequate and improper packing. Moreover, any material found short inside the intact packing cases and/or damaged shall be supplied by the Vendor at no extra cost.
- 1.3 The Vendor shall be responsible for ascertaining the "Transport Limitation" for large and bulky items and also for supplying Equipment/Components within the framework of the "Transport Limitations". If any transport limitations are known to the Purchaser, the same is specified under Section-C of Volume-IIB.
- 1.4 The Inspection Agency may require inspection of the packing material and/or packages prior to despatch. However, approval of the same shall in no way exonerate the Vendor from any loss or damage due to faulty packing.
- 1.5 All packing covers, packing materials shall become the property of the Purchaser.
- 1.6 All cases shall be provided with suitable cutouts, closed by bolted wooden blanks to facilitate inspection by customs authorities, wherever applicable. Waterproof transparent papers shall be provided at the cutout locations to prevent water ingress into the casing through the cutout.
- 1.7 For any specific packing and marking instructions applicable for the project/equipment refer to Section-C/Section-D of Volume-IIB. This shall be considered by the Vendor while preparing the "Packing and Marking Procedure".

2.0 **PACKING/MARKING**

General packing and marking instructions are given below. The vendor shall consider the same while preparing the "Packing and Marking Procedure" which is to be submitted for approval.

2.1 **PACKING**

- 2.1.1 All Equipment/Material shall be suitably packing and protected for the entire period of despatch, storage and erection against impact, abrasions, corrosion, incidental damage due to vermin, sunlight, high temperature, rain, moisture, humidity, dust, sea-water spray (Wherever applicable) as well as rough handling and delays in transit and storage in open.
- 2.1.2 Packages shall be constructed out of sound material and of dimensions proportional to the size and weight of contents.
- 2.1.3 In case dust and water proof of packing is specified in Section-C/D of Volume-IIB, then the planks of the cases shall be provided with tongue and groove joints of lap joints so that they provide a dust and water proof joint. The joints shall be so positioned as to make entry of water through it difficult. Otherwise, the cases shall be constructed with butted boards/planks with the gap in between being as small as possible but not exceeding 3 mm.

Breather holes suitably blanked off with small gauge, perforated zinc-coated metal piece shall be used for dust and waterproof packing.

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- 2.1.4 Adequate battens of suitable sizes shall be provided at appropriate places to prevent the movement of fragile Equipment/Component inside the casing. Special care shall be taken to provide soft non-hygroscopic packing materials between the hard packing materials and the fragile equipment.
- 2.1.5 The contents of the packets, shall be entirely covered and sealed in thick polythene sheets not less than 100 microns thick. All the inside walls of the packages shall be lined with waterproof paper to protect the equipment from damage due to dust and moisture.
- 2.1.6 Silica-gel or approved moisture absorbing material in small cotton bags shall be placed and tied at various points on the equipment, wherever necessary.
- 2.1.7 All machined and plated parts shall be protected with anti rust grease.
- 2.1.8 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 check 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.
- 2.1.9 Bundled material shall be strapped rigidly with steel band over the protective covering.
- 2.1.10 Adequate provision of skids or pallets shall be made to keep the packages above the collating drainage. Crates and other large containers shall have drain holes in the bottom to prevent collection of water within the packing. This is especially important where the cargo itself is subject to condensation (cargo sweat).
- 2.1.11 Components containing glass shall be carefully covered with shock absorbing protective material such as expanded polystyrene (Thermo Cole).

Components requiring shock proof packing shall be provided with suitable cushion such as foam rubber, wood wool etc. Straw and hay shall not be used as cushioning material under any circumstances.

- 2.1.12 Exposed threaded portions shall have metallic/non-metallic protective covering.
- 2.1.13 All flanges etc. which are prone to scratching shall be provided with either metal or wooden caps bolted in place. Metal caps should have a minimum thickness of 3 mm and wooden caps 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 the other.
- 2.1.14 All openings in the equipment shall be tightly covered plugged or capped to prevent foreign material from entering.
- 2.1.15 Loose material e.g. bolts, nuts etc. shall be packed in gunny bags and sealed in polythene bags with proper tagging. Small parts, components, spares, accessories etc. shall be packed in suitable inner containers such as paper bags, Hessian bags (with or without water proof lining), cartons, tins etc. and then packed in to the case.
- 2.1.16 Wherever necessary, to facilitate insertion of sling and handling by fork lift, trucks, two or three bottom battens of at least 50 mm thickness shall be provided at appropriate locations.
- 2.1.17 Wherever necessary, retaining plates (for strengthening the corners) and aligning protection brackets (for protecting the wood from sling) of mild steel of at least 1 mm thickness shall be provided at appropriate places on the cases.
- 2.1.18 No packing shall be less than one cubic meter in volume. Smaller packages shall be clubbed together and placed in a larger case of not less than one cubic meter in volume.
- 2.1.19 The supplier shall control packing, packaging and marking processes (including materials used) to the extent necessary to ensure conformance to specified requirements.
- 2.1.20 The supplier shall arrange for the protection of the quality of product after final inspection and test. Where contractually specified, this protection shall be extended to include delivery to destination.
- 2.2 Where Purchase Order for spares is placed separately, separate packing/marking (not with main equipment) shall be done in the similar manner as of main equipment.

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2.3 Packing List containing item description and quality.

- 2.3.1 Each package shall contain a packing list in a water proof envelope. This shall be nailed to one of the inner sides of the case.
- 2.3.2 A packing list, placed inside a water proof envelope shall be kept inside a thin metallic pocket screwed to the outside of the case at appropriate place.
- 2.3.3 All items of material shall be clearly marked for easy identification against the packing list.
- 2.3.4 Copies of the packing list shall be distributed by the Vendor prior to despatch as per agreed distribution procedure.

2.4 Marking

- 2.4.1 Each package shall have following details marked on at least three sides.
 - a) Project Title, Contract Number and Destination Address
 - b) Package dimensions and Net/Gross Weights
 - c) Signs showing “Side-up”, slinging and sling position. “Fragile” in case of delicate equipment.
 - d) Any handling and unpacking instructions, if considered necessary.
 - e) Identification Mark relating to the appropriate shipping documents.
- 2.4.2 Marking shall be clear, legible and durable in uniform “BLOCK LETTERS”.
- 2.4.3 In case of spare parts, each spare parts shall be clearly marked and labeled on the outside of its packing with its description and catalogue/part number.
- 2.4.4 Any other specific marking, instructions as mentioned in Section-C of Volume-IIB.

2.5 Erection Marks

All equipment comprising multipart assemblies e.g. steel frame works, piping etc. shall be marked with identifying numbers and/or letters corresponding to those of the approved drawing or material lists. These erection marks shall be clearly readable.

3.0 FOR ELECTRICAL EQUIPMENT ONLY

- 3.1 Cables shall be supplied in non-returnable drums, adequately braced and with cable ends adequately sealed to prevent ingress of moisture.
- 3.2 Batteries shall be supplied dry, in uncharged condition. Appropriate quantity of the acid of the correct specific gravity shall be shipped separately in porcelain jars, packed in steel wire baskets.
- 3.3 Switchgear cubicles shall be packed and shipped in separate convenient sections with coupler plates and associate hardware Circuit breakers, which are of withdraw able type shall be packed and shipped separately. All relays and instruments shall be packed and shipped separately with their operating mechanisms temporarily arrested from movement for transport purposes.
- 3.4 Transformers rated 2000 KVA and less shall be shipped with oil. Transformers rated more than 2000 KVA shall be shipped without oil but with the 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.

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TITLE	SPECIFICATIONS NO.	REV. No.
GENERAL INSTRUCTIONS FOR DESPATCH	PES-100-916	03

1. No equipment/material shall be despatched without prior consent of Purchaser (BHEL). Vendor shall despatch the equipment/material only after receipt of “Quality Surveillance Note” and Material Despatch Clearance Certificate (MDCC) issued by the Purchaser.
2. Vendor shall notify in writing to site at least within fifteen (15) days in advance of shipment, the probable date, when the equipment/material shall be ready for despatch.
3. Before shipment is made, the Vendor shall notify the purchase and the site the following at least seven (7) days in advance by foreign vendor and three (3) days in advance by Indian Vendor.
 - a) CIF-Value of consignment
 - b) Name of Ship/Train/Truck
 - c) Name of Shipping/Transport Agency
 - d) Probable date of despatch from his works/Probable date of departure of the ship
 - e) Expected date of arrival at site/port of destination
 - f) Weight, size and contents of each packing
 - g) Any other information required by the purchaser
4. Immediately after the shipment is made, necessary shipping/transport documents shall be sent by the vendor in accordance with the instructions of the purchaser. The shipping documents/transport documents shall comprise of the following:
 - a) Bill of lading/Railway Receipt/Lorry Receipt, as applicable
 - b) Freight invoice
 - c) FOB/FOR Invoice
 - d) Packing List (No. of copies as required)
 - e) Certificate of origin
 - f) Letter to Insurers
 - g) Quality Surveillance Note
5. The distribution procedure for the above documents shall be as per the “Despatch Instructions”.

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TITLE	SPECIFICATIONS NO.	REV. No.
OPERATION AND MAINTENANCE MANUALS	PES-100-917	03

1. Operation and Maintenance Manuals shall be specifically compiled for the project by the Vendor. A collection of the Manufacturer's standard leaflets will not be accepted to mean compliance of this section. O&M Manuals shall be written in English language unless otherwise specified and shall be submitted to the Purchaser for approval.
2. Vendor shall submit "Preliminary" O&M Manuals as per agreed date in the Vendor's Drawings/Documents List. The number of copies shall be two (2) unless otherwise mentioned in Section-C/D.
3. If after the commissioning and initial operation of the plant, the O&M Manuals required any major modifications/additions/changes, the same shall be incorporated and the updated final O&M Manual in the form of one (1) reproducible original and Twelve (12) copies (Unless otherwise mentioned in Section-C/D) shall be submitted by the Vendor to the Purchaser. In case of minor modifications/additions/changes affecting only some sections, the required amendments shall be furnished by the Vendor.
4. These manuals shall be properly bound in book form and be of standard size convenient for use and contain all information, description of equipment, diagrams etc. necessary to enable the customer/purchaser to operate and maintain the whole of the works. The scope of Vendor shall not be considered as complete until such O&M Manuals have been supplied to BHEL.
5. The "Preliminary" O&M manual shall be complete and comprehensive and shall include all the necessary documents, approved/corrected drawings, test reports etc.
6. Final O&M Manuals shall include final documents/drawings inclusive of "As Built Drawings" as applicable with changes necessitated during commissioning and subsequent operation of the plant duly incorporated.
7. Any other drawings which require modification as a result of operational experience will at no extra cost be revised by the vendor and reissued.
8. The O&M Manual shall cover each type of equipment in separate sections and shall include the following but not limited to:
 - Index of contents
 - Description of all equipment/sections
 - Full details and drawings of all equipment (Other than shop drawings)
 - Step by step procedures for operation and maintenance and testing of equipment/systems
 - Step by step procedure to dismantle; reassemble and adjust all parts of the equipment during maintenance.
 - List of approved drawings together with performance rating curves of all equipment and test certificates wherever applicable and these reduced to A3/A4 sizes.
 - List of parts (spare part booklet) equipment wise, with procedure for ordering spares.
 - Charts showing lubrication, checking, testing and replacement procedures as required to be carried out daily, weekly, monthly and at longer intervals.
 - Operation/Maintenance checklists.
 - Functional requirements, limits and set values as applicable to equipment/system.
 - Fault location charts – Do's and Don'ts
 - List of recommended spares.

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TITLE	SPECIFICATIONS NO.	REV. No.
FIELD QUALITY PLAN	PES-100-918	03

(Not applicable to supply packages, excepting Clauses 1,2 & 3)

1. Vendor shall furnish “Field Quality Plan” detailing out the specific Quality Control Procedures covering the following activities:
 - a. Packing Marking and Despatch of Material/Equipment.
 - b. Receipt of Materials/Equipment and Handling at site
 - c. Storage and Preservation
 - d. Pre-erection
 - e. Erection
 - f. Pre-commissioning
 - g. Commissioning
 - h. Post-commissioning
2. Relevant Log Sheets to be filled at Site and Check-lists for Erection and Commissioning prepared by Vendor shall be submitted for Purchaser’s approval.
3. Contract will be awarded to Vendor subject to his furnished Field Quality Plan acceptable to the Purchaser.
4. Field Quality Plan shall be submitted in the same proforma as per schedule “Quality Plan” enclosed in Volume-III.
5. The submission schedule for Field Quality Plan, Log Sheets and check-lists shall be finalized in the Vendor Drawing/Document Submission Schedule.
6. All requirements in respect of Erection and commissioning as specified, and as per other statutory regulations, if any, in addition to the practices followed by Vendor, shall be considered while preparing Field Quality Plan and Check-lists.
7. All pre-commissioning/Performance Tests to be performed at Site shall be listed in the Field Quality Plan.
8. Copies of Catalogues/Drawings/Standards/Specifications/Procedures etc, as mentioned in the Field Quality Plan shall be furnished to BHEL.

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TITLE	SPECIFICATIONS NO.	REV. No.
MATERIALS HANDLING PRESERVATION AND STORAGE	PES-100-919	03

(Not applicable for Supply packages)

1. All equipment/materials furnished under the contract and arriving at site shall be promptly received, unloaded and transported and stored as per approved procedures and accepted practices by the Vendor. The Vendor shall use designated storage areas or stock rooms to prevent damage or deterioration of product pending movement to site. Vendor shall establish stipulated method for authorizing receipt to and despatch from such areas.

In order to detect deterioration to condition of product in stock, shall be assessed at appropriate intervals. Periodic inspection, maintenance as well as protection from damage and deterioration etc. of the same is Vendor's responsibility until the plant/equipment is commissioned and handed over to the Purchaser.

2. No equipment/material shall be stores directly on the ground/floor. Vendor shall ensure that the identification marks, match marks and tags on the equipment/materials are preserved in good condition.
3. Within thirty (30) days of award of contract, Vendor shall provide required proof that he had arranged necessary insurance coverage against all risks. Vendor shall also assist the Purchaser to lodge insurance claims as and when required. Vendor shall also furnish Indemnity Bond and complete other such formalities as per the instructions of the Purchaser.
4. Tools and Tackles and other handling equipment intended to be used and arranged by the Vendor shall be furnished to the Purchaser for his approval. Dimension and weight of the packages shall be duly considered by the Vendor while finalizing this requirement.
5. Vendor shall be responsible for examining all shipment and notify the purchaser of any damage, shortage, discrepancy, etc. for the purpose of purchaser's information only. However, the Vendor shall be solely responsible for any shortage of damage in transit, handling and/or storage. Vendor shall submit to the "Purchaser" every week a report detailing all the receipts during the week. Any repairs carried out by the Vendor on the equipment/materials stores at site shall be duly notified to the Purchaser.
6. Any demurrage, wharf age and other such charges claimed by the transporters, railways etc., shall be to the account of the Vendor.
7. Vendor shall maintain an accurate and exhaustive record, detailing out the list of all equipment received and keep such record open for inspection of the "Purchaser" at any time.
8. All equipment shall be handled very carefully to prevent damage or loss either to the equipment or to the floor where they are stored. The equipment from the store shall be moved to the actual location at the appropriate time so as to avoid damage/deterioration of such equipment at site.
9. All materials stores in the open or dusty location must be covered with suitable weather proof and flameproof covering material wherever applicable.
10. Vendor shall make suitable indoor/air-conditioned storage facilities to store all equipment/material which require indoor/air-conditioned storage. Normally, all the electrical equipment such as motors, control gear, generators, exciters and consumables like electrodes, lubricants, etc. and bolts and nuts shall be stored in the closed storage space and all electronic equipment shall be stored in air-conditioned storage space. The purchaser may direct the Vendor to move materials which in his opinion will require indoor storage and the same shall be compiled with by the Vendor.
11. Adequate drainage and fire protection facilities shall be provided.
12. All electrical panels, control gear, motors and such other devices shall be properly dried by heating before they are installed and energized. Motor bearings, slip ring, commutators and other exposed parts shall be protected against moisture ingress and corrosion during storage

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and periodically inspected. Heavy rotating parts in assembled conditions shall be periodically rotated to prevent corrosion due to prolonged storage.

13. All the electrical equipment such as motors, generators etc. shall be tested for insulation resistance at least once in three (3) months from the date of receipt till the date of commissioning and a record of such measured insulation values maintained by the Vendor. Such records shall be open for inspection by the Purchaser.
14. The Vendor shall ensure that all the packing materials and protection devices used for the various equipment during transit and storage are removed before the equipments are installed.
15. The consumables and other supplies likely to deteriorate due to storage must be thoroughly protected and stored in a suitable manner to prevent damage or deterioration in Quality.

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TITLE	SPECIFICATIONS NO.	REV. No.
SPARES , FIRST FILL OF CONSUMABLES AND SPECIAL ERECTION & MAINTENANCE TOOLS AND TACKLES	PES-100-920	03

1. SPARES

1.1 ERECTION AND COMMISSIONING SPARES

- 1.1.1 Erection/Commissioning spares are those spares which may be required during erection start up and/or commissioning. These spares are also termed as “Commissioning Spares” or “Start up spares”. Bidder shall be responsible for the completeness of these spares till taking over of the plant/system.
- 1.1.2 The bidder shall list out erection and commissioning spares, as normally required for the equipment/system offered, in the schedule Form No. PEM-6053 duly filled up without the prices as no additional payment shall be made for these spares as they form part of main supply.
- 1.1.3 In case certain erection/commissioning spares are specified in the technical specifications in Section C/D of Volume IIB, the same shall also be included in the above schedule. The bidder, being responsible for completeness shall also offer additional spares, as he considers necessary, in this respect.
- 1.1.4 These spares shall be despatched along with the main equipment.

1.2 MANDATORY SPARES (INITIAL OR ESSENTIAL SPARES)

- 1.2.1 Mandatory Spares are those spares which are considered “Essential” by the purchaser and specified in the technical specifications in Section C/D of Volume IIB. These are also termed as initial or Essential Spares.
- 1.2.2 The bidder shall quote the prices of these spares as well as the additions considered necessary in the schedule (Form No. PEM-6053). Wherever quantity of spares is indicated as ‘set’ or ‘lot’, the same shall be quantified suitably.
- 1.2.3 These spares shall be despatched separately before taking over the equipment/system, by the purchaser.

1.3 RECOMMENDED SPARES (O&M SPARES)

- 1.3.1 Recommended spares are those spares which are normally recommended by the bidder for 2/3/5 years, as applicable, trouble free operation of equipment/system offered. These are also termed as O&M Spares. These spares do not form part of supply of system/equipment and shall be supplied against specific Purchase Order.
- 1.3.2 The offer shall contain a complete spare parts handbook with details and diagrams giving Sl.No., Part No., Drawing/Catalogue No., lead time and life etc.
- 1.3.3 The bidder shall give details of item wise recommended spare parts for 2/3/5 years (unless specified otherwise) trouble free operation, for the particular equipment offered out of the above part hand book in Schedule Form No. PEM-6054 which shall be duly filled and submitted with the offer.
- 1.3.4 Spare part hand book need approval of the purchaser, in the same manner, as the approval for drawings/data sheets. For this purpose no. of copies as specified in Section-C, shall be furnished by the Vendor within three (3) months of award of contract or as mutually agreed.
After approval, the vendor shall submit no. of copies as specified in Section-C, of recommended spares handbook after six (6) months of award of contract or final release of payment, whichever is earlier or as mutually agreed upon.

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2.0 **FIRST FILL OF CONSUMABLES**

All the first fill of Consumables such as Oil, Lubricant, graph papers/plotting pen/ink for recorders, chemicals etc. for satisfactory, operation of the equipment/system offered shall be Vendor's responsibility unless specially excluded. No. additional payment shall be made in respect of above as they form part of main supply, the Vendor shall furnish the specification of all such Consumables for approval.

3.0 **SPECIAL ERECTION & MAINTENANCE TOOLS & TACKLES**

3.1 **SPECIAL ERECTION TOOLS & TACKLES**

- 3.1.1 The bidder shall list out in the schedule PEM-6055 the description, Quality and the price for any special erection tools & tackles required to erect the equipment offered. No additional payment shall be made for the same if the scope of contract includes erection.

3.2 **SPECIAL MAINTENANCE TOOLS & TACKLES**

- 3.2.1 The bidder shall list out all the tools, tackles, appliances, lifting devices etc. for effective maintenance and servicing of plant/equipment in the schedule, PEM – 6055
- 3.2.2 Maintenance Tools & Tackles, if specified in Technical Specification in Section C/D of Vol. II B, shall also be included by the bidder in the above schedule. The bidder shall identify these items with an asterisk mark (*).
- 3.2.3 The Special maintenance tools and tackles shall be handed over to the Purchaser at the time of "Taking Over", duly packed in MS Boxes. Large heavy boxes shall be supplied on suitable rubber typed wheels.
- 4.0 The Schedules PEM-6053 & PEM-6054 shall be duly filled up by the bidder and the same will be submitted with the bid in Duplicate i.e.
- i. Without price to be furnished along with schedules of the Technical bid.
 - ii. With unit prices duly filled up to be furnished along with schedules of the price bid.
5. The bidder shall indicate the prices of each and every item listed schedules of Price bid, otherwise the cost of all the unquoted items (i.e. items listed without unit price indicated shall be deemed to be included in the contract price)
6. The Purchaser reserves the right to buy any or all the items and effect price adjustments on the basis of unit prices quoted by the bidder in the above schedules. All the items supplied shall be new and unused.

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TITLE	SPECIFICATIONS NO.	REV. No.
PRE-COMMISSIONING, TRIAL OPERATION PERFORMANCE TESTS AT SITE AND TAKING OVER	PES-100-921	03

(Not applicable for Supply packages excepting Clause 14)

1 START UP/PRECOMMISSIONING

- 1.1 On completion of erection of equipment and before start-up/precommissioning, each items of the equipment shall be thoroughly cleaned and then inspected jointly by the purchaser and the vendor for correctness and completeness of installation and acceptability for start up leading to precommissioning trials and initial operation of the equipment. The list of precommissioning tests to be performed shall be mutually agreed and included in the Field Quality Plan which shall be approved by BHEL.
- 1.2 Vendor shall be responsible for carrying out all the precommissioning tests as well as cleaning/inspection operations prior to precommissioning.
- 1.3 After the precommissioning tests are satisfactorily over the complete equipment shall be considered ready for initial operation. During initial operation, the complete equipment shall be operated integral with sub-system and supporting equipment as a complete plant.
- 1.4 The precommissioning tests, if any, to be performed for the equipment shall be mentioned in the O&M manual.

2.0 TRIAL OPERATION

- 2.1 After satisfactory initial operation, the plant shall then but put on trial operation. During period of Trial Operation all the necessary adjustment shall be made by the vendor trial operating over the full load range the plant to be made ready for Performance and Guarantee Tests.

Duration of Trial operation of the complete Plant/equipment shall be fourteen (14) days out of which at least seventy two (72) hours or any other duration as agreed upon between the purchaser and the vendor, shall be on continuous operation on a maximum load made available at Site by Engineer. The trial operation shall be considered successful, provided that each items of the plant/equipment can be operated continuously at the specified characteristics for the period of trial operation.

- 2.2 For the period of trial operation, the time of operation with any load shall be counted. Minor interruptions not exceeding four (4) hours at a time, caused during the continuous operation, shall not affect the total duration of the trial operation. However, for longer interruption, the engineer may extend the trial operation for the period of interruption.
- 2.3 A trial operation report comprising of observations and recording of various parameters to be measured in respect of the above trial operation shall be prepared by the Vendor. This report be sides recording the details of various observations during the trial run shall also include the dates of start and finish of the trial operation and shall be signed by the representatives of both the parties. The report shall have sheets, recording all the details of interruption occurred, adjustment made and any minor repairs done during the trial operation. Based on the observations necessary modification/repairs to the plant/equipment shall be carried out by the vendor to the full satisfaction of the purchaser to enable the later to accord permission to carry out performance and Guarantee Tests on the plant/equipment. However, minor defects which do not endanger the stage operation of the plant/equipment shall not be considered as reasons for withholding aforesaid permission.

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3.0 **PERFORMANCE TESTS AT SITES**

- 3.1 The final tests as to the performance shall be conducted at site by the vendor to the satisfaction of purchaser. Such tests shall be commenced after the plant/equipment has attained stable operation at the end of trial operation. The date of commencement of performance tests shall be within a period of forty five (45) days of completion of trial operation or as may be mutually agreed upon.
- 3.2 These test shall be binding on both the parties of the contract to determine compliance of the equipment/system with performance guarantees.
- 3.3 The tests shall be conducted at the specified load points and as near the specified conditions as practicable. The purchaser/vendor will apply proper corrections in calculations, to take into account of conditions which do not correspond to the specified conditions.
- 3.4 All test instrumentation as required for the Performance & Efficiency test as well as for pre-commissioning tests shall be arranged by the vendor. Instrumentation which are not included in Vendors, scope of supply shall however be returned to him after successful completion of the tests. Calibration and installation of these test instrumentation and the labour required for the successful performance of these trials shall be vendor's responsibility. All test instrumentation shall be in accordance with the applicable code.

All test instruments and calibration procedure shall be duly approved by the purchaser. Batch calibration shall not be accepted.

- 3.5 Any special equipment, tools and tackles required for the successful completion of the performance tests shall be provided by the vendor, free of cost.
- 3.6 The guaranteed performance figures of the equipment shall be proved by the vendor during these performance tests as per the guaranteed figures agreed with the vendor in the Schedule PEM-6028 "Schedule of Performance Guarantees" should the results of these tests show any deficiency from guaranteed values, the vendor shall modify the equipment as required to enable it to meet the guarantees. In such cases, the performance tests shall be repeated within one month from the date the equipment is ready for tests and all costs of modifications including labour, material and the cost of additional testing to prove that equipment meets the guarantees, shall be borne by the vendor.
- 3.7 The specific tests to be conducted on equipment have been brought out in section C/D of the specification.
- 3.8 Performance tests shall make allowance for instrumentation errors as may be decide by the purchaser. The provisions outlined in the ASME performance test code or other International and Indian approved equivalents shall generally be used as a guide for all the above tests procedure unless otherwise specified in Section C/D of the specification.
- 3.9 Liquidated damages for not meeting performance guarantees shall be assessed and recovered from the Vendor, if applicable, as detailed in Volume-I of the specification.
- 3.10 The details of all measuring/recording meters, test instrumentation such as class of accuracy, make etc. shall be covered in the trial operation/performance test reports.

4.0 **TAKING OVER**

- 4.1 Upon successful completion of all the performance tests at site, the purchaser shall issue to the vendor a "Taking over Certificate" as a proof of the final acceptance of the equipment/system/area wise as per the contract. Such certificate shall not unreasonably by withheld nor will the purchaser delay issuance thereof, on account of minor omissions or defects which do not affect the commercial operation and/or cause any serious risk to the equipment. Such certificate shall not relieve the vendor of any of his obligations which otherwise survive by the terms and conditions of the contract after issuance of such certificate.

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TITLE	SPECIFICATIONS NO.	REV. No.
TRAINING OF OWNER'S/ PURCHASER'S PERSONNEL	PES-100-922	03

(Applicable only when the scope includes Training as mentioned in Section-C of Volume IIB)

1. The vendor shall undertake to train free of cost, engineering personnel selected and sent by the Owner/Purchaser at the works of the Vendor. The period and the nature of training for the individual personnel shall be agreed upon mutually between the vendor and the Purchaser. These engineering personnel shall be given special training in the shops, where the equipment will be manufactured and/or in their collaborators' works and where possible, in any other Plant where equipment manufactured by the Vendor or his collaborator is under installation or test, to enable those personnel to become familiar with the equipment being furnished by the Vendor. The training may also extend to the design offices of the Vendor or his collaborator.
2. All traveling and living expenses for the engineering personnel to be trained during the total period of training shall be borne by the owner/purchaser as the case may be. The vendor will, however, arrange for necessary accommodation and other facilities, at charge, at the site of the training. These engineering personnel while undergoing training shall be responsible to the vendor for discipline.
3. In the event of the owner/purchaser, for any reasons, failing to avail of the training facilities, he shall not be entitled for any rebate whatsoever on this account.
4. Owner/purchaser's engineers shall be involved during erection commissioning and performance testing etc. for training purposes.