

2 X 660MW MOUDA STPP


VOLUME – IIB

TECHNICAL SPECIFICATION FOR STEAM TRAPS

SPECIFICATION NO. PE-TS-387-100-M010



**BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA**

	PREAMBLE	SPECIFICATION NO. PE-SS-999-100-Q001	
		VOLUME	
		SECTION	
		REV. NO.	DATE: 26/08/2011
		SHEET	1 OF 1

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

1.1 **Volume-I** (CONDITIONS OF CONTRACT)

This consists of four parts as below:-

- Volume-IA : This part contains instructions to bidders for making bids to BHEL.
- Volume-IB : This part contains general commercial conditions of the tender & includes provision that vendor is responsible for the quality of item supplied by their sub-vendors.
- Volume-IC : This part contains special conditions of contract.
- Volume-ID : This part contains commercial conditions for erection & commissioning site work, as applicable.

1.2 **Volume-II** TECHNICAL SPECIFICATIONS

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

- Volume-IIA : General Technical Conditions
- Volume-IIB : Technical Specification including Drawings, if any.

1.2.1 **Volume-IIB**

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 of technical specifications of equipments 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).

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.

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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SECTION-A

SCOPE OF ENQUIRY

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SCOPE OF ENQUIRY

1. SCOPE

This enquiry covers the Design, Manufacture, Inspection & Testing at vendor's and/or his sub-vendor's works, proper packing and delivery to site of steam traps complete with all accessories as per the requirements mentioned in different sections of the specification for 2 X 660MW MOUDA STPP.


2. GENERAL TECHNICAL INSTRUCTIONS

- a) 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 Engineer/ Owner, who will interpret the meaning of drawing and specifications, and shall be entitled to reject any component or material, which in his judgement is not in full accordance herewith.
- b) The omission of specific reference to any component/ accessories necessary for the proper performance of steam traps shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of steam traps at quoted prices.
- c) Design/ drawings/ data sheets etc. shall be subject to approval of BHEL as per specification, in the event of order.
- d) BHEL's / customer's representative shall be given access to the shop in which the equipment are being manufactured or tested and all test records shall be made available to him.
- e) The equipment covered under this specification shall not be despatched unless the same have been finally inspected, accepted and shipping release issued by BHEL.

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SECTION-B


PROJECT INFORMATION

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PROJECT INFORMATION


The bidder shall acquaint himself by a visit to the site, if felt necessary, with the conditions prevailing at site before submission of the bid. The information provided in this section will be for general guidance and shall not be contractually bidding on BHEL/OWNER. All relevant site data/information as may be necessary shall have to be obtained /collected by the bidder.

The plant site is located in Mouda Tehsil, district Nagpur of Maharashtra State, having latitude and longitude of 20°10'50" N and 79°23'52" E respectively. The site is bounded by villages Kumbhari on North, Lapka & Mouda on South, Koradi on East & Rahli on West and is at a distance of about 4 Kms from Mouda town and approachable from NH-6. Nearest railway station is Chacker, 8 Kms away from the site on Nagpur – Kolkata Broad Gauge (BG) section of South Eastern Railway (main line). The nearest commercial airport is at Nagpur located at a distance of approximately 42 Kms from the project site.

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SECTION-C

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFIC TECHNICAL REQUIREMENTS STEAM TRAPS Memorandum of Understanding	SPECIFICATION NO. PE-TS-387-100-M010	
		SECTION C	
		REV. NO.: 00	DATE: 29.05.2014
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1. GENERAL

- 1.1 The steam traps shall meet the technical requirements and conform to the standard technical specifications, Data sheet A of Section-D. This section-C gives the requirements specific to the project for which procurement will be done. These requirements, if any, will be informed later and shall also be complied with. However, wherever the details given in standard technical specification of Section-D and Data sheets A are different, the requirements of Data sheet A shall prevail. Similarly in the event of contradictions between Section-C & Section-D/ Data sheet A, Section -C will prevail.
- 1.2 The technical requirements for steam traps shall, in general, be as per the attached standard Technical specification for steam traps, and Data sheets A of Vol. II B Section D.

2. SCOPE OF SUPPLY

- 2.1 The steam traps along with strainer (external/integral) shall be supplied as per Data sheets A of Section D. For detail refer the same.
- 2.2 Commissioning spares, if any.
- 2.3 Mandatory spares as applicable depending upon the project requirement.
- 2.4 Various drawings, datasheets, operation and maintenance manuals etc. as specified in Data Sheet-C.

3. EXCLUSIONS:


Erection & Commissioning of equipment at site.

4. QUALITY ASSURANCE

The Quality Plans enclosed with this specification specify minimum quality control requirement. During contract stage vendor shall furnish these Quality Plans duly signed & stamped for their compliance. Quality plans shall be approved by BHEL and customer (if necessary). All inspection and testing shall be carried out by BHEL and CUSTOMER (if necessary). In case inspection is by both BHEL and CUSTOMER, then the inspection can be carried out jointly or separately, which will be informed later

5. PAINTING REQUIREMENT

The surfaces of equipment to be painted shall be thoroughly cleaned of all grease, oil, loose mill scale, dirt, rust and any other foreign mater. Mechanical cleaning by power tool scrapping/ steel wire brushes shall be adopted to clean the surfaces. However, in certain locations where power tool cleaning cannot be carried out, hand scrapping may be permitted with steel wire brush and/abrasive paper. Steam Traps & Strainers shall be painted externally after the necessary testing has been carried out. Just before the painting, Steam Traps & Strainers bodies and other items shall be thoroughly cleaned Traps & Strainers shall be painted with Heat resistant aluminium paint to IS-13183 Gr.I (for temp. 400°C-600°C) IS-13183 Gr.II (for temp. 200°C-400°C). TOTAL DFT-80 MICRONS.

	SPECIFIC TECHNICAL REQUIREMENTS STEAM TRAPS Memorandum of Understanding	SPECIFICATION NO. PE-TS-387-100-M010	
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6 PACKING INSTRUCTIONS:

- a) Each trap shall be drained, cleaned, prepared and suitably protected in such a way so as to minimize the possibility of damage and deterioration during transit and storage.
- b) The trap shall be dispatched in total assembled form.
- c) Body ends shall be suitably sealed to protect them against damage during transit and storage.
- d) Trap Tag Nos. shall be incorporated in all the dispatch documents.
- e) Proper care shall be taken to avoid damage to the finished surface during transit.
- f) Vendor to provide soft copy of photos/snaps of duly packed traps/valves. The soft copies to be provided by vendor after final inspection of valves. Clearance for despatch of traps/valves will be given only after satisfactory packing conditions of traps/valves from vendors work.
- g) All the traps shall be packed suitably in wooden cases in order to avoid damage during transit and also during storage at site in tropical climate conditions for a period of 15-18 months.

6 SPARES


- a) **Mandatory Spares:** These shall be as per Data Sheet-A
- b) Order for the spares may be placed simultaneously or otherwise at the option of purchaser.

7 DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents (enclosed in Vol III) duly filled, signed and stamped along with the bid:


- a) Compliance sheet
- b) Schedule of Deviations if any.
- c) Schedule of declaration.
- d) VSA/flow capacities for all type & sizes of traps & strainers
- e) Relevant drawing/leaflet of the offered trap covering the following information.
 - Complete cross sectional arrangement of the steam trap and strainer.
 - Pressure & Temperature rating
 - Flow in Kg/hour vs flow pressure in kg/cm²
 - Binding dimensions, dismantling clearance and weight.
 - Bill of material incorporating all the materials of construction of various parts.
 - Material specification shall be indicated in ASTM/ANSI/BS/IS Standards codes.
 - Hydraulic test pressure.
- f) Diameter perforation and number of perforations/ sq. inch in strainer mesh.
- g) Illustrated technical literature regarding functioning of the traps
- h) Operating and Maintenance Instructions.

The above are the only documents which will be used for technical evaluation unless other documents are asked for during technical clarifications. Any other technical document enclosed with the bid shall be ignored for the purpose of technical evaluation. All other documents attached with the specification are for information of the vendor and no comments shall be marked on these.

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SECTION-D

STANDARD TECHNICAL SPECIFICATION DATA SHEET – A QUALITY PLAN DATA SHEET – C


	TITLE: STANDARD SPECIFICATION FOR STEAM TRAPS	SPECIFICATION NO. PE-SS-999-555-M010	
		VOLUME . II B	
		SECTION D	
		REV. NO. 03	DATE. 24.05.2014
		SHEET 1 OF 2	

1. GENERAL

This specification covers the design, materials, construction features, manufacture and testing of Steam Traps along with Integral/External Strainers at Vendor's or/ and sub-Vendor's works inclusive of painting and packing requirements.

2. DESIGN REQUIREMENTS AND CONSTRUCTION FEATURES

- 2.1 The traps covered in the specification shall be of Thermodynamic, Thermostatic, Inverted Bucket and Ball float type with auto-drain arrangement conforming to supplier's own proven design.
- 2.2 All traps shall be with integral/external strainer designed suitably to prevent the internals of the trap from damage due to dirt etc.
- 2.3 Straining area of strainer shall be kept as minimum four times of the pipe cross-sectional area.
- 2.4 The traps should be suitable for horizontal/vertical mounting with internals easily accessible and replaceable.
- 2.5 Arrow showing inlet should be cast on the body of traps and strainers.
- 2.6 Wherever steam traps are coming under purview of IBR, the relevant stipulations of IBR shall be applicable for compliance.
- 2.7 The trap cover shall be such that it can be removed without breaking the inlet or discharge pipe.
- 2.8 On line cleaning of the strainer element shall also be possible.
- 2.9 All steam traps and strainers shall be with socket welded ends as per ANSI B16.11.
- 2.10 Ball Float type Steam Traps shall be provided with thermostatic air vent (pressure balance type).
- 2.11 Sizes of steam traps and strainers covered herein are from 15 mm Nb to 25mm NB with socket welded (SW) end connection. Seat diameter for Inverted Bucket & Ball Float trap shall be selected based on the required maximum condensate flow rate & working pressure which will be indicated at ordering stage.
- 2.12 A metallic (stainless steel plate 2mm thick) nameplate shall be fitted on each valve. Nameplate inscription required for each valve shall be indicated at the contract stage. Inscriptions shall be engraved 1 mm deep filled with enamel paint.

	TITLE: STANDARD SPECIFICATION FOR STEAM TRAPS	SPECIFICATION NO. PE-SS-999-555-M010	
		VOLUME . II B	
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3 MATERIALS

- 3.1 The materials of construction of main parts of traps shall be specified in Data sheet-A.
- 3.2 The materials of construction of the remaining parts shall be suitable for the service conditions shall be subject to approval of the purchaser.
- 3.3 Materials used in manufacture of traps shall be of tested quality.

4 INSPECTION AND TESTS:

- 4.1 The items covered under this contract shall be subjected to inspection, testing and quality surveillance. The Inspection Agency shall, at all reasonable times have access to Vendor's works, Quality Control records and all facilities as reasonably required for carrying out the inspection and testing efficiently, and these shall be provided by the vendor free of cost.
- 4.2 The minimum NDT/testing and inspection requirements for traps shall be as per the attached Quality Plan. However, in case of order, final inspection and testing shall be carried out as per the final approved quality plan without any price implications.


5 SURFACE PREPARATION & PAINTING

- 5.1 The surface preparation of all exterior and interior surfaces of valves shall include the following:
 - a) Removal of oil, grease and dirt.
 - b) Removal of rust and scale etc.,
 - c) Sand blasting/ shot blasting.
- 5.2 All exterior surfaces of valves shall be painted with primer and finish coated with coating of min. 40 micron thickness. Color shade etc. shall be subject to BHEL/ Customer approval.

6 PROTECTION FOR DESPATCH

- 6.1 Traps shall be protected from external damage and sealed against the ingress of dirt.
- 6.2 Ends of the traps shall be protected by means of polythene caps/rubber end protectors.
- 6.3 All the traps shall be suitably packed in wooden cases in order to avoid damage during transit and also during storage at site.

- 7 Trap Tag Nos. shall also be incorporated in all the despatch documents.

	DATA SHEET-A 2X660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M010	
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1. Thermostatic type steam trap with integral strainer

Design Pressure: Refer Data Sheet-A, sheet 1

Design Temperature: Refer Data Sheet-A, sheet 1

Hydraulic Test Pressure: 1.5 Times the pressure at which Steam trap is designed.

Whether Governed by IBR: Yes

Painting: Heat resistant aluminium paint to IS-13183 Gr.I (for temp. 400°C-600°C)
IS-13183 Gr.II (for temp. 200°C-400°C). TOTAL DFT-80 MICRONS.

MATERIAL OF CONSTRUCTION (CARBON STEEL THERMOSTATIC STEAM TRAP)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body and Cover	ASTM A 105
2	Thermostatic Element	Stainless Steel (AISI 304)
3	Valve seat	Stainless Steel (hardness min. 250BHN)
4	Gasket	Spiral wound SS and Graphite (Asbestos Free)
5	Strainer	Stainless Steel (Perforated)
6	Bolts/Nuts	ASTM A193 Gr.B7/ASTM A194 Gr.2H
7	Internals	Stainless Steel
8	Name plate	SS 316 (2 mm thick)

MATERIAL OF CONSTRUCTION (ALLOY STEEL THERMOSTATIC STEAM TRAP)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body and Cover	ASTM A182 F22 (Alloy Steel)
2	Thermostatic Element	Stainless Steel (AISI 304)
3	Valve seat	Stainless Steel (hardness min. 250BHN)
4	Gasket	Spiral wound SS and Graphite (Asbestos Free)
5	Strainer	Stainless Steel (Perforated)
6	Bolts/Nuts	ASTM A193 Gr.B7/ASTM A194 Gr.2H
7	Internals	Stainless Steel
8	Name plate	SS 316 (2 mm thick)

	DATA SHEET-A 2X660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M010	
		VOLUME-IIB	
		SECTION : D	
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		Sheet 3 of 3	

2. Inverted bucket steam trap with external Y-type strainer

Maximum Working Pressure: 22 kg/cm² (maximum) and Vacuum

Maximum Working Temperature: 427°C

Hydraulic Test Pressure: 44 kg/cm²

Whether Governed by IBR: No

Painting: Heat resistant aluminium paint to IS-13183 Gr.I (for temp. 400°C-600°C)
IS-13183 Gr.II (for temp. 200°C-400°C). TOTAL DFT-80 MICRONS.

MATERIAL OF CONSTRUCTION (INVERTED BUCKET STEAM TRAP)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body and cover	Cast Carbon Steel as per ASTM A216 Gr.WCB
2	Valve, Valve seat	AISI 420(furnace hardened to 50 RC). Differential hardness Shall be maintained between seats
3	Valve lever, Bucket, Bucket clip	AISI 304
4	Bolts/Nuts	ASTM A193 Gr.B7/ASTM A194 Gr.2H
5	Gasket	Non asbestos fibre
6	Name plate	SS 316 (2 mm thick)

MATERIAL OF CONSTRUCTION (EXTERNAL Y-TYPE STRAINER)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body and Strainer cap	ASTM A216 Gr.WCB
2	Strainer	SS 304 (0.8 mm perforated with 20 mesh screen)
3	Gasket	Non asbestos fibre
4	Name plate	SS 316 (2 mm thick)



QUALITY PLAN		CUSTOMER: NTPC		PROJECT: 2x660 MW Mouda STP		SPEC. NO. PE-SSS-999-142-M010	
SHEET 1 OF 2		BIDDER/VENDOR		QP NO. PE-QP-999-142-M003		REV.01 DTD. 25-01-2008	
CHARACTERISTICS CHECKED		SYSTEM		ITEM		SECTION	
CATEGORY		CATE-GORY		Y-TYPE STEAM STRAINERS		AGENCY	
EXTENT OF CHECK		TYPE/METHOD OF CHECK		REFERENCE DOCUMENT		FORMAT OF RECORD	
CHECK		CHECK		ACCEPTANCE NORMS		P W V	
OPERATION		OPERATION		VOLUME		REMARKS	

S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	SYSTEM	CATE-GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	ONE/HEAT/ BATCH	PHYS TESTS CHEM TESTS	MA	1 PHYS & CHEM PROPERTIES 2. SURFACE DEFECTS	APPD. DATA SHEET/ TECH.SPEC.	APPD. DATA SHEET/ TECH.SPEC.	TEST CERT.	3/2	2	1	CORRELATION REQD FOR BODY CAP ONLY
1.0	MATERIAL CONTROL																
1.1	BODY, CAP & LOCK RING		MA	MA	VISUAL	100%											
1.2	MESH	1. CHEM PROPERTIES 2. MESH SIZE/ PERFORATION DIA.	MA	MA	CHEM. TESTS	1/SHEET											
2.0	IN PROCESS CONTROL																
2.1	ALL COMPONENTS	1. WORKMANSHIP & FINISH 2. DIMENSIONS	MA	MA	VISUAL	100%											
3.0	ASSEMBLY CONTROL																
3.1	COMPLETE STRAINER	1. WORKMANSHIP AND FINISH 2. OVERALL DIMENSIONS 3. LEAK TIGHTNESS	MA	MA	VISUAL	100%											
			CR	CR	HYDROTEST AT 2 TIMES THE DESIGN PRESSURE	100%											

BHEL		PARTICULARS		BIDDER/VENDOR	
		NAME			
		SIGNATURE			
		DATE			
		29/5/14			
				BIDDER'S/ VENDOR'S COMPANY SEAL	



QUALITY PLAN		CUSTOMER: NTPC	PROJECT: 2 X 66 MW MUDA STP	SPEC. NO.: PE-SSS-999-142-M010
SHEET 2 OF 2		BIDDER/VENDOR	QP NO.: QP-999-142-M003	SPEC. TITLE: STEAM TRAP
CHARACTERISTICS CHECKED		SYSTEM: STEAM DRAINS	REV. 01 DTD: 25-01-2008	SECTION: VOLUME
S.N.O.	COMPONENT/ OPERATION	CATE- GORY	REFERENCE DOCUMENT	AGENCY
		EXTENT OF CHECK	ACCEPTANCE NORMS	P W V
		TYPE/METHOD OF CHECK	FORMAT OF RECORD	REMARKS

S.N.O.	COMPONENT/ OPERATION	CATE- GORY	EXTENT OF CHECK	REFERENCE DOCUMENT	APPD DRG/ TECH SPEC.	APPD DRG	INSPN REPORT	SECTION	REMARKS
4.0	SOCKET WELDED ENDS	CR	100%	APPD DRG/ TECH SPEC.	APPD DRG/ TECH SPEC.	APPD DRG	INSPN REPORT	2, 1	1
	1. DIMENSIONS			ASTM E165	NO SURFACE DEFECTS		INSPN REPORT	2, 1	1
	2. SURFACE DEFECTS	CR	100%	TECH SPEC	TECH SPEC		INSPN REPORT	2	1
5.0	PAINTING	MA	100%	TECH SPEC	TECH SPEC		INSPN REPORT	3/2	1
	1. SURFACE PREPARATION			APPD DRG/ TECH SPEC	APPD DRG/ TECH SPEC		INSPN REPORT	3/2	1
	2. PAINTING	MA	100%	TECH SPEC	TECH SPEC		INSPN REPORT	2, 1	1
6.0	VERIFICATION OF ALL PREVIOUS TEST CERTIFICATES/ INSPN REPORTS	MA	100%	TECH SPEC	TECH SPEC		INSPN REPORT	2	1
	1. SURFACE PREPARATION			APPD DRG/ TECH SPEC	APPD DRG/ TECH SPEC		INSPN REPORT	3/2	1
	2. AS PER TECH. SPEC.	MA	100%	TECH SPEC	TECH. SPEC		INSPN REPORT	3/2	1
7.0	PROVISION OF NAME PLATE & PACKING IN WOODEN CASES	MA	100%	TECH. SPEC	TECH. SPEC		INSPN REPORT	2	1

NOTE : CR = CRITICAL ACTIVITY MA = MAJOR ACTIVITY MI = MINOR ACTIVITY
 1 = PURCHASER 2 = VENDOR 3 = SUB VENDOR OF THE VENDOR
 P = PERFORMED BY W = WITNESSED BY V = VERIFIED BY

COS/SOP/11 REV.01 DTD. JULY '98

BHEL	PARTICULARS	BIDDER/VENDOR
	NAME	
	SIGNATURE	
	DATE	
		BIDDER'S/VENDOR'S COMPANY SEAL

2 x 6.6 MW MODA STP

QUALITY PLAN		CUSTOMER: NYPC		PROJECT : RATE CONTRACT		SPEC. NO : PE-SSS-999-142-M010	
SHEET 1 OF 3		BIDDER/VENDOR		Qp NO : PE-QP-999-142-M015		REV.01 DTD. 25-01-2008	
CHARACTERISTICS CHECKED		SYSTEM : POWER CYCLE		ITEM : INVERTED BUCKET STEAM TRAPS		SECTION : VOLUME	
COMPONENT/ OPERATION		CATE- GORY		REFERENCE DOCUMENT		AGENCY	
S. NO.		EXTENT OF CHECK		ACCEPTANCE NORMS		REMARKS	
		TYPE / METHOD OF CHECK		FORMAT OF RECORD		P W V	

S. NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	MA	PHYS., CHEM. PROPS	TYPE / METHOD OF CHECK	EXTENT OF CHECK	ONE /HEAT / HT BATCH	APPROVED DRAWING/ TECH. SPECIFICATION SHEET	APPROVED DRAWING/ RELEVANT MATERIAL SPECIFICATION	TEST CERTIFICATE	AGENCY	REMARKS
1.	MATERIALS											
1.1	BODY, COVER, VALVE, VALVE SEAT, BUCKET, VALVE LEVER, BUCKET CLIP & WEIGHT	1. PHYSICAL, CHEMICAL PROPERTIES	MA	PHYS., CHEM. PROPS	TYPE / METHOD OF CHECK	EXTENT OF CHECK	ONE /HEAT / HT BATCH	APPROVED DRAWING/ TECH. SPECIFICATION SHEET	APPROVED DRAWING/ RELEVANT MATERIAL SPECIFICATION	TEST CERTIFICATE	3/2	1
		2. SURFACE DEFECTS	MA	VISUAL		100%	100%	MSS-SP-55	MSS-SP-55	INSPN .REPORT	3	2
1.2	INTEGRAL STRAINER (IF APPLICABLE)	CHEM PROPERTIES & MESH SIZE/ PERFORATION DIA.	MA	CHEM. TESTS & MEASUREMENT		1/SHEET SAMPLE PIECE	1/SHEET SAMPLE PIECE	APPD. DATA SHT. & TECH SPEC.	APPD. DATA SHT. & TECH SPEC.	TEST CERT. /INSP. REPORT	3	2
2.0	IN-PROCESS											
2.1	ALL COMPONENTS	1. DIMENSIONS	MA	MEASUREMENT		100%	100%	MFG. DRAWING	MFG. DRAWING	LOG BOOK	3/2	-
		2. SURFACE DEFECTS	MA	VISUAL		100%	100%	-DO-	-DO-	-DO-	3/2	-
2.2	VALVE, VALVE SEAT	1. SURFACE DEFECTS	CR	PENTRANT TEST		100%	100%	ASTME-165	NO DEFECTS	INSPN. REPORT	3/2	2,1
		2. HARDNESS	MA	TESTING		100%	100%	APPD. DRG.	APPD. DRG.	INSPN REPORT	3/2	2,1
		3. LAPPING	MA	BLUE MATCHING		100%	100%	SEATING SURFACES SHALL HAVE UNIFORM METAL TO METAL CONTACT		INSPN REPORT	3/2	1
3/0	SUB-ASSEMBLY											
3.1	VALVE & VALVE SEAT	1. LEAK TIGHTNESS	CR	HYDRO/AIR TEST		100%	100%	APPD. DRG	APPD. DRG.	TEST. CERT.	3/2	2,1
3.2	COVER	1. ALIGNMENT	MA	VISUAL		100%	100%	-DO-	PROPER FITTING	LOG BOOK	3/2	-


BHEL		PARTICULARS		BIDDER/VENDOR	
NAME		SIGNATURE		DATE	
		<i>[Signature]</i>		29/5/14	
BIDDER'S/VENDOR'S COMPANY SEAL					

2x660MW Mouda STPP

QUALITY PLAN		CUSTOMER: NTPC		PROJECT: DATE CONTRACT		SPEC. NO.: PE-SSS-999-142-M010	
SHEET 2 OF 3		BIDDER/VENDOR		QP NO. PE-QP-999-142-M015		REV. 01 DID. 25-01-2008	
CHARACTERISTICS CHECKED		SYSTEM: POWER CYCLE		ITEM: INVERTED BUCKET STEAM TRAPS		SECTION: VOLUME	
COMPONENT/OPERATION		CATE-GORY		REFERENCE DOCUMENT		AGENCY	
S. NO.		EXTENT OF CHECK		ACCEPTANCE NORMS		P W V	
		CHECK		FORMAT OF RECORD		REMARKS	

S. NO.	COMPONENT/OPERATION	CHARACTERISTICS CHECKED	CATE-GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	APPROVED DRAWING	APPROVED DRAWING	INSPN REPORT	FORMAT OF RECORD	AGENCY	REMARKS
4.0	ASSEMBLY										
4.1	COMPLETE ASSEMBLY	1. CLEANLINESS & COMPLETENESS, DIMENSIONS, SOCKET WELD ENDS, ARROW MARKING ETC. 2. LEAK TIGHTNESS OF BODY 3. PERFORMANCE	MA CR CR	VISUAL & MEASUREMENT HYDRO. TEST PERFORMANCE TEST UNDER SIMULATED CONDITION	100% 100% 100%	APPROVED DRAWING APPD. DRG./TECH. SPEC./DATA SHEET TEST CHART	APPROVED DRAWING	INSPN REPORT TEST CERT TEST CERT.	3/2 3/2 3/2	2,1 2,1 2,1	- - 1*
4.2	Flow capacity test (type test)	Condensate discharge	CR	Discharge flow	1 per pressure rating & orifice size trap	Appd. Flow capacity	Appd. Flow capacity	Type test certificate	3/2	2	1
5.0	SOCKET WELD ENDS	1. DIMENSIONS	CR	TEMPLATE	100%	APPD. DRG./TECH. SPEC.	APPD. DRG.	INSPN REPORT	2	2,1	1
6.0	PAINTING	2. SURFACE DEFECTS	CR	PT	100%	ASTM E 165	NO SURFACE DEFECTS	INSP. REPORT	2	2,1	-
7.0	VERIFICATION OF ALL PREVIOUS TEST CERTIFICATES/ INSPN REPORTS	1. SURFACE PREPARATION & PAINTING 1. REVIEW OF ALL TEST CERTIFICATES/ INSPN. REPORTS OF PREVIOUS STAGES	MA MA	VISUAL VISUAL	100% 100%	TECH. SPEC. TECH. SPEC.	TECH. SPEC.	INSPN REPORT INSPN REPORT	3/2 3/2	2 -	1 2,1

BHEL		PARTICULARS		BIDDER/VENDOR	
		NAME			
		SIGNATURE			
		DATE			
		29/5/14			
				BIDDER/VENDOR'S COMPANY SEAL	

	QUALITY PLAN		CUSTOMER: NYC	PROJECT: 2 x 660 MW MOUDA STPP	SPEC. NO.: PE-SS-999-142-M010									
	SHEET 1 OF 2	CHARACTERISTICS CHECKED	BIDDER/VENDOR	Q.P. NO.: PE-QP-999-142-M003	REV.00 DTD. 24.05.2014	SPEC. TITLE: STEAM TRAPS								
S.NO.	COMPONENT/OPERATION	SYSTEM	CATE-GORY	TYPE/METHOD OF CHECK	POWER CYCLE	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	TEST CERT.	AGENCY	SECTION	VOLUME	REMARKS
											P	W	* V	

1.0	RAW- MATERIAL													
1.1	BODY,CAP,DISC AND PLUG	1. PHYSICAL, CHEMICAL PROPERTIES	MA	PHYS. CHEM. ANALYSIS	ONE/HEAT /BATCH	APPD. DRG./ TECH. SPEC.	APPD. DRG./ TECH. SPEC.	APPD. DRG./ TECH. SPEC.	INSPN. REPORT	3/2	2	1		CORRELATION REQD (except disc & plug)
		2. SURFACE DEFECTS	MA	VISUAL	100%	MSS-SP-55	MSS-SP-55	MSS-SP-55	-DO-	3/2	-	2,1		
		3. DIMENSIONS	MA	MEASUREMENT	100%	APPD. DRG./ TECH. SPEC.	APPD. DRG./ TECH. SPEC.	APPD. DRG./ TECH. SPEC.	-DO-	3/2	-	-		
1.2	SCREEN	1.CHEMICAL PROPERTIES AND MESH SIZE	MA	CHEMICAL TEST & MEASUREMENT	ONE PER LOT	APPD. DRGS./ DATA SHEET	APPD. DRGS./ DATA SHEET	APPD. DRGS./ DATA SHEET	LAB REPORT/ INSP. REPORT	3/2	2	2,1		MESH SIZE AND MESH PERFORMANCE DIA. SHALL ALSO BE CHECKED.
2.0	MACHINING													
2.1	ALL COMPONENTS	1. DIMENSIONS	MA	MEASUREMENT	100%	-DO-	-DO-	-DO-	INSPN. REPORT	3/2	-	-		
		2. SURFACE DEFECTS	MA	VISUAL EXAM.	100%	MSS-SP-55	MSS-SP-55	MSS-SP-55	-DO-	3/2	-	-		
		3. Hardness of valve Seat	CR	HARDNESS TEST	100%	APPD. DRGS./ DATA SHEET	APPD. DRGS./ DATA SHEET	APPD. DRGS./ DATA SHEET	-DO-	3/2	2	2,1		
		4. DISC SEAT & BODY SEAT	CR	SURFACE DEFECT	100%	ASTM E165	ASTM E165	NO DECECTS	-DO-	3/2	2	2,1		
		5. CONTACT SURFACE BETWEEN BODY SEAT AND DISC	CR	BLUE-MATCHING	100%	-DO-	-DO-	UNIFORM METAL TO METAL CONTACT	INSPN REPORT	3/2	2	1		BATCHWISE
3.0	ASSEMBLY INSPECTION	1. CLEANING & DEBURRING	MA	VISUAL	100%	TECH SPEC.	TECH SPEC.	TECH SPEC	LOG BOOK	3/2	-	-		
		2. DIMENSIONS	CR	MEASUREMENT	100%	-DO-	-DO-	APPD. DRGS./ DATA SHEET	INSPN. REPORT	3/2	2,1	1		
		3. LEAK TIGHTNESS OF BODY	CR	HYDRAULIC TEST	100%	APPD. DRG./ TECH. SPEC./ DATA SHEET	APPD. DRG./ TECH. SPEC./ DATA SHEET	NO LEAKAGE	TC/IBR FORMAT	3/2	2,1	1		

BHEL		PARTICULARS		BIDDER/VENDOR	
		NAME			
		SIGNATURE			
		DATE			
				BIDDER'S/VENDOR'S COMPANY SEAL	



QUALITY PLAN		CUSTOMER: NATC		PROJECT: 2 x 660 MW MOUDA STPP		SPEC. NO.: PE-SS-999-142-M010				
SHEET 2 OF 2		BIDDER/VENDOR		QP NO. PE-QP-999-142-M003		REV:00 DTD. 24.05.2014				
CHARACTERISTICS CHECKED		SYSTEM		ITEM: THERMOSTATIC STEAM TRAPS		SECTION				
S.NO.	COMPONENT/ OPERATION	CATE-GORY	TYPE/METHOD OF CHECK	POWER CYCLE	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
					CHECK				P	W * V


S.NO.	ASSEMBLY INSPECTION CONTD. (-----)	4. FUNCTION OF TRAP	CR	PERFORMANCE TESTING IN SIMULATED CONDITIONS (REF. ATTACHED TEST PROCEDURE)	10% (RANDOM) MIN. 1 NO.	APPD. DRG./ TECH. SPEC./ DATA SHEET	TECH. SPEC./ DATA SHEET/APPD. DRG	TC/IBR FORMAT	2	1	1	AS PER ATTACHED TEST PROCEDURE (TO BE CARRIED OUT IF TOTAL QTY. IS MORE THAN 5) CHP-REFER NOTE
4.0	SOCKET WELD ENDS	1.DIMENSIONS	CR	TEMPLATE	100%	APPD. DRG./ TECH. SPEC.	P	INSF. REPORT	2	1	1	
5.0	PAINTING	2. SURFACE DEFECTS	CR	PT	100%	ASTME 165	NO SURFACE DEFECTS	-DO-	2	1	1	
		SURFACE PREPARATION AND PAINTING	MA	VISUAL	100%	APPD DRG	APPD DRG	-DO-	2	2	1	
6.0	PROVISION OF NAME PLATE & PACKING IN WOODEN CASESON	AS PER TECH. SPEC.	MA	VISUAL	100%	APPD DRG./ TECH. SPEC.	APPD DRG./ TECH. SPEC.	(Soft copy of photographs)	3/2	-	1	Photographs of traps after packing to be verified by BHEL before issuing MDCC.

ABBREVIATIONS

CR= CRITICAL CHARACTERISTIC P= PERFORMED BY, W = WITNESSED BY V = VERIFIED BY
 MA=MAJOR CHARACTERISTIC, 1= PURCHASER (BHEL) 2 = VENDOR, 3 = SUB VENDOR OF THE VENDOR

NOTE: SUCCESSFUL VENDOR SHALL SUBMIT FUNCTIONAL TEST PROCEDURE OF TRAP ALONG WITH QP IMMEDIATELY AFTER ORDER IS PLACED FOR APPROVAL.

BHEL		PARTICULARS		BIDDER/VENDOR	
		NAME			
		SIGNATURE			
		DATE			
		28/5/14			
				BIDDER'S/ VENDOR'S COMPANY SEAL	

	DATASHEET-C STEAM TRAPS 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M010	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 29.05.2014
		SHEET 1 OF 1	

DATA SHEET - C

Drawings/documents distribution schedule to be followed by the successful bidder:

1.0 The successful bidder shall submit the following drawings/documents within two weeks after award of contact.

- 1.1 Relevant drawings/leaflets for the traps showing following information.
- i) Complete cross sectional arrangement of the traps.
 - ii) Binding dimensions, dismantling clearances & weights.
 - iii) Bill of material incorporating all the materials of construction of various parts along with BS/ASTM/IS standards to which the materials conform to.
 - iv) Special features, if any, as called for in the specific requirement
 - v) Type of oil/Grease wherever required and its annual consumption.

1.2 Quality Plan duly signed & stamped with bidder's seal.

2.0 Within the stipulated time period as per vendor's drawings/ documents schedule, the following shall be submitted but not later than one month before first dispatch.

- a) Drawings of components & details as deemed necessary.
- b) Instruction manual for erection, operation and maintenance.
- c) Storage instructions.

3.0 Before dispatch of the equipment the vendor shall furnish the following.

- a) Material Test certificates.
- b) Shop test reports and certificates.

4.0 Distribution of drawings / documents for all projects:

After award of the contract the successful bidder shall furnish drawings/ documents as per following distribution schedule.

Sl. No.	Type of Document	No of Hard copies	No. of Soft copies
1	Documents submitted for Approval	2 Nos.	1 Nos.
2	Final Distribution (Approved Documents)	6 Nos.	1 Nos.
3	O&M Manuals	6 Nos.	2 Nos.

2 X 660MW MOUDA STPP

VOLUME - III

TECHNICAL SCHEDULES


FOR

STEAM TRAPS

SPECIFICATION NO. PE-TS-387-100-M010




**BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA**

	STEAM TRAPS 2X660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M010	
		VOLUME : III	
		SECTION:	
		REV. NO.: 00	DATE: 29.05.2014
		SHEET 1 OF 1	

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SL.NO	TITLE
1	COMPLIANCE SHEET
2	SCHEDULE OF DEVIATIONS
3	SCHEDULE OF DECLARATIONS
4	SCHEDULE OF PRICES

C

	COMPLIANCE SHEET STEAM TRAPS 2 X 660MW MOUDA STPP	SPECIFICATION NO.:PE-TS-387-100-M010	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 29.05.2014
		SHEET 1 OF 2	

The bidder shall sign and return a copy of this compliance sheet along with his offer, indicating his compliance to the points specified herein:

A) Technical Details: Bidder to tick whichever is applicable.

1.	Technical requirements as per Data sheet-A & Standard Technical Specification of Vol IIB Section-D	Accepted	Not Accepted
2.	Quality Plan	Accepted	Not Accepted
3.	Specific Technical requirements of Vol IIB Section-C	Accepted	Not Accepted
4.	Documentation requirement as per Data sheet-C of Vol IIB Section-D	Accepted	Not Accepted

B) Deviations to the technical specification are not acceptable. However, if there are any deviations due to unavoidable reasons then the same to be clearly specified in the schedule of deviation. In case of no deviations, schedule of deviations to be filled as NIL by bidder.

C) The offered materials should be either equivalent or superior to those specified. Also for components where material is not specified, the material used shall be suitable for intended duty.


D) QP/ test procedures shall be submitted in the event of order based on the guidelines given in the specification & QP enclosed therein. QP will be subject to BHEL/Customer approval in the event of order & customer hold points for inspection/ testing shall be marked in the QP at the contract stage. All Inspection/ testing shall be as per approved QP. The charges for 3rd party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the equipment by the bidder. This 3rd party inspection agency shall be approved by BHEL and will be decided in contract stage.

E) All drawings/data – sheets etc. to be submitted during contract shall be subject to BHEL/Customer review/ approval.

F) GA drawings, as submitted with offer at tender stage are for reference purpose only and shall be subject to approval during contract stage.

G) The commissioning spares (if any) are supplied on 'As Required Basis' & prices for same shall be quoted in the price bid format. If the bidder has not quoted for commissioning spares at tender stage and if the same are actually required during commissioning, then the same shall be supplied by bidder without any cost to BHEL.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL

	COMPLIANCE SHEET STEAM TRAPS 2 X 660MW MOUDA STPP	SPECIFICATION NO.:PE-TS-387-100-M010	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 29.05.2014
		SHEET 2 OF 2	

- H) All drawings/documents in soft as well as hard copy shall be submitted within 2 weeks from placement of Purchase orders in the event of order. A technical representative of bidder shall come for meeting with BHEL along with revised documents within one week of receipt of BHEL comments to resolve all issues and incorporate all comments in the soft copy for further submission to customer if required. Further, on receipt of customer comments on the documents a technical representative from bidder shall come for meeting to resolve all issues and incorporate all comments in the soft copy at BHEL and resubmit the drawings /documents for CAT I approval and shall visit customer/customer's consultant if required for across the table approval of documents.
- I) Any special tools & tackles, if required, shall be in bidder's scope.
- J) Prices for recommended spares (if any) for three year operation shall be furnished separately and not to be included in the base price.
- K) The offered model design should be of bidder's proven model and they should have designed, manufactured, supplied and tested the equipment of similar type and rating in at least Two (2) projects and be in satisfactory operation for last two (2) years.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	
				COMPANY SEAL



TITLE
*** SCHEDULE OF DEVIATIONS**
() From Technical Specifications (Volume -II B)


SPECIFICATION NO.
PE-TS-387-100-M010

VOL III

SHEET..... OF.....

We the undersigned hereby certify that the above mentioned are the only deviations.

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

	TITLE *SCHEDULE OF DECLARATIONS	SPECIFICATION NO PE-TS-387-100-M010
		VOL III
		SHEET..... OF.....

* Bidder shall include this schedule both in technical and Price offers

DECLARATION

Icertify that all the technical data and information pertaining to this specification are correct and are true representation of the equipment/system covered by our format proposal number Dated and there is no deviation to the specification other than those listed in "Schedule of deviations" of this Vol III.

I hereby certify that I am duly authorized representative of the Bidder's company whose name appears above my signature.

Bidder's Company Name

Authorised representative's Signature

Name

Bidder's Name The bidder hereby agrees to fully comply with the requirements and intent of this specification for the price indicated

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

