



# **2x660 MW ENNORE SEZ STPP**


## **VOLUME – IIB**

### **TECHNICAL SPECIFICATION FOR STEAM TRAPS**

**SPECIFICATION NO. PE-TS-412-100-M010**



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

	<b>PREAMBLE</b>		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


	<b>TECHNICAL SPECIFICATION STEAM TRAPS 2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412100-M010	
		VOLUME : IIB	
		SECTION:	
		REV. NO.: 00	DATE: 05.02.2015
		SHEET 1	OF 1

## CONTENTS

SECTION	TITLE
A	SCOPE OF ENQUIRY
B	PROJECT INFORMATION
C	SPECIFIC TECHNICAL REQUIREMENTS
D	STANDARD TECHNICAL SPECIFICATIONS
	STEAM TRAPS
	<ul style="list-style-type: none"> <li>▪ STANDARD TECHNICAL SPECIFICATION FOR STEAM TRAPS</li> <li>▪ DATA SHEET – A</li> <li>▪ QUALITY PLAN</li> </ul>
	DATA SHEET – C

	<b>TECHNICAL SPECIFICATION STEAM TRAPS 2X660MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION-A	
		REV. NO.: 00	DATE: 06.02.2015
		SHEET 1 OF 1	

**SECTION-A**  
**SCOPE OF ENQUIRY**

	<b>TECHNICAL SPECIFICATION</b> <b>STEAM TRAPS</b> <b>2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION: A	
		REV. NO.: 00	DATE: 05.02.2015
		SHEET 1	OF 1


## 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 2X660 MW ENNORE SEZ 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.

	<b>TECHNICAL SPECIFICATION</b> <b>STEAM TRAPS</b> <b>2X660MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION: B	
		REV. NO.: 00	DATE: 06.02.2015
		SHEET 1	OF 1

# SECTION-B

## PROJECT INFORMATION



	<b>TECHNICAL SPECIFICATION</b> <b>STEAM TRAPS</b> <b>2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION: B	
		REV. NO.: 00	DATE: 05.02.2015
		SHEET 1 OF 1	

## PROJECT INFORMATION

**PROJECT NAME:** 2X660MW ENNORE SEZ STPP

**OWNER :** TANGEDCO

### **Major Road distances:**

The proposed site for main power plant is located near Ennore port (approx. 5 kms). The nearest Railway station is at Athipattu Pudunagar (approx 5 kms).

All weather roads from Pattamandri on the Thiruvottiyur-Ponneri district highway is the nearest road access.

The nearest airport is at Chennai at a distance of 60 km.

## LOCATION

The site is located near Vayalur Village, Ennore

Latitude : 13017' N to 130

Longitude : 8018' N

018' E to 800

Distance from Chennai City : 35 km 19' E


Nearest Airport is at Chennai at a

Distance of : 60 km

Nearest Seaport is : Ennore


Nearest Railway Station is : Athipattu Pudunagar (approx 5 kms)



	<b>TECHNICAL SPECIFICATION STEAM TRAPS 2X660MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION: C	
		REV. NO.: 00	DATE: 06.02.2015
		SHEET 1	OF 1

# SECTION-C

## SPECIFIC TECHNICAL REQUIREMENTS

	<b>SPECIFIC TECHNICAL REQUIREMENTS STEAM TRAPS</b> <b>Memorandum of Understanding 2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		SECTION C	
		REV. NO.: 00	DATE: 05.02.2015
		Sheet 1 of 3	

**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 per Data Sheet A.~~
- 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. SURFACE PREPARATION / PAINTING REQUIREMENT**

All surfaces to be painted shall be thoroughly cleaned of oil, grease and other foreign matter, surface shall be free of moisture and contamination from chemical and solvent.

The following surface scheme are to be carried out for cleaning of steam traps

- a). Solvent cleaning
- b). Application of rust converter (Ruskil or equivalent grade)
- c). Power tool cleaning

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

	<b>SPECIFIC TECHNICAL REQUIREMENTS</b>		SPECIFICATION NO. PE-TS-412-100-M010		
	<b>STEAM TRAPS</b>		SECTION C		
	<b>Memorandum of Understanding</b>		REV. NO.: 00	DATE: 05.02.2015	
	<b>2X660 MW ENNORE SEZ STPP</b>		Sheet 2 of 3		

items shall be thoroughly cleaned, Traps & Strainers shall be painted with heat resistance aluminum paint of minimum 40 microns, 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) and IS-13183 Gr.III (for temp. up to 200°C)

## 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/cm<sup>2</sup>
  - 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.

	<b>SPECIFIC TECHNICAL REQUIREMENTS STEAM TRAPS</b> <b>Memorandum of Understanding 2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		SECTION C	
		REV. NO.: 00	DATE: 05.02.2015
		Sheet 3 of 3	


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.

	<b>TECHNICAL SPECIFICATION</b> <b>STEAM TRAPS</b> <b>2X660MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 06.02.2015
		SHEET 1	OF 1

## SECTION-D

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

(13)


	<b>TITLE:</b> STANDARD SPECIFICATION FOR STEAM TRAPS	SPECIFICATION NO. PE-SS-999-555-M010	
		VOLUME . II B	
		SECTION D	
		REV. NO. 03	DATE. 09.06.2014
		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.

	<b>TITLE:</b> STANDARD SPECIFICATION FOR STEAM TRAPS	SPECIFICATION NO. PE-SS-999-555-M010	
		VOLUME . II B	
		SECTION D	
		REV. NO. 03	DATE. 09.06.2014
		SHEET 2 OF 2	

**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.

DATASHEET - A REQUIREMENT OF STEAM TRAPS 2X660MW ENNORE SEZ STPP												SPECIFICATION NO.: PE-TS-412-100-IM010							
VOL: IIB												SECTION: D							
REV:0 DATE: 05.02.2015												SHEET 1 OF 3							
SL. NO.	TAG NOS	TYPE	SIZE (NB)	SERVICE DESCRIPTION	SERVICE	DESIGN PRESURE (KG/CM2G)	DESIGN TEMP(deg C)	OPERATING INLET OF TRAP (KG/CM2 (A))	OPERATING D/S OF TRAP (KG/CM2 (A))	MAX CONDENSATE RATE (KG/HR)	BODY	MATERIALS	PIPE OD (MM)	PIPE THICKNESS (MM)	END CONN	SCREWED BLOW OFF CONN. WITH REMOVABLE PLUG	IBR REQUIRED	TOTAL QUANTITY FOR 2 UNITS (MAIN)	MANDATORY SPARES (QTY)
1	ASV-102, ASV-107, (EACH 2NOS)	THERMOSTATIC STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	20	350	16	0.1 (VAC)	10	CS	SS	33.4	4.55	SW	YES	YES	4	NIL
2	ASV-113, ASV-118, ASV-123, ASV-128, ASV-133, ASV-138, ASV-143 (EACH 2 NOS), CONTIGENCY - 10 NOS.	THERMOSTATIC STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	20	350	16	ATM	10	CS	SS	33.4	4.55	SW	YES	YES	24	NIL
3	CRHV-127, CRHV-133, CRHV-139(EACH 2NOS)	THERMOSTATIC STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	15	400	12	0.1 (VAC)	10	CS	SS	33.4	4.55	SW	YES	YES	6	NIL
4	CRHV-145(EACH 2NOS)	THERMOSTATIC STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	15	400	11.6	0.1 (VAC)	10	CS	SS	33.4	4.55	SW	YES	YES	2	NIL
5	CRHV-151 (EACH 2NOS),CONTIGENCY-02 NOS.	THERMOSTATIC STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	15	400	12.64	0.1 (VAC)	10	CS	SS	33.4	4.55	SW	YES	YES	4	NIL
6	EXV-107 EXV-113(EACH 2NOS) CRHV-107,CRHV-121(EACH 2 NOS),CONTIGENCY-02 NOS.	THERMOSTATIC STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	15	400	13.82	0.1 (VAC)	10	CS	SS	33.4	4.55	SW	YES	YES	4	NIL
7	DRV-42 (EACH 2NOS)	INVERTED BUCKET STEAM TRAP	\$	POWER CYCLE	INTERMITTENT	73.1	360	59.94	0.1 (VAC)	10	CS/AS**	SS	33.4	4.55	SW	YES	YES	6	NIL
8	DRV-41 (EACH 2NOS)	EXTERNAL Y-TYPE STRAINER	25	DRAIN LINE	CONTINUOUS	7/ VAC	110	.95 (VAC)	0.1 (VAC)	300	CS	SS	33.4	4.55	SW	YES	NO	2	NIL
9			25	DRAIN LINE	CONTINUOUS	7/ VAC	110	.95 (VAC)	0.1 (VAC)	300	CS	CS	33.4	4.55	SW	YES	NO	2	NIL
<b>TOTAL</b>																	<b>54</b>		

- NOTES:**
- For detailed material of construction refer pages 2 and 3 of this DataSheet-A.
  - \$ - Bidders to offer minimum size of thermodynamic steam trap meeting the parameters mentioned in the above DataSheet-A. Bidder to offer Suitable matching pieces to match with connecting pipe size.
  - \*\* Bidder can quote for either of above mentioned body material in such a manner that all the parameters in above Data sheet-A meet out in totality.
  - Painting: Heat resistant aluminium paint to IS-13183 Gr.1 (for temp. 400 deg C-500 deg C), IS-13183 Gr.11 (for temp. 200 deg C-400 deg C), Total DFT-Min. 40 microns.
  - Socket Welding (SW) will be as per ASME-B16.11.
  - CS:Carbon Steel, AS: Alloy Steel,SS-STAINLESS STEEL

	<b>DATA SHEET-A</b>  <b>2X660MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME-IIB	
		SECTION : D	
		REV. NO.: 00	DATE: 05.02.2015
		Sheet 2 of 3	

### 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- Min.40 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)

	<b>DATA SHEET-A</b>  <b>2X660MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME-IIB	
		SECTION : D	
		REV. NO.: 00	DATE: 05.02.2015
		Sheet <b>3</b> of 3	

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

Design Pressure: Refer Data Sheet-A, sheet 1

Design Temperature: Refer Data Sheet-A, sheet 1

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- Min.40 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)




<b>QUALITY PLAN</b>		CUSTOMER: 2X660MW ENNORE SEZ STPP		SPEC. NO.: PE-SS-999-142-M010	
SHEET 1 OF 2		BIDDER/VENDOR		SPEC. TITLE: STEAM TRAPS	
COMPONENT/ OPERATION		SYSTEM		SECTION	
CHARACTERISTICS CHECKED		CATE- GORY		AGENCY	
POWER CYCLE		TYPE/METHOD OF CHECK		W * V	
EXTENT OF CHECK		REFERENCE DOCUMENT		RECORD	
ACCEPTANCE NORMS		FORMAT OF RECORD		P	
ITEM: THERMOSTATIC STEAM TRAPS		OP NO. PE-QP-412-142-M003		REV./00 DATED 05.02.15	
VOLUME		REMARKS			

S.NO.	RAW- MATERIAL	PHYS. CHEM. ANALYSIS	ONE/HEAT /BATCH	APPD. DRG./ TECH. SPEC.	TEST CERT.	SECTION	REMARKS
1.0	RAW- MATERIAL						
1.1	BODY,CAP,DISC AND PLUG	1. PHYSICAL, CHEMICAL PROPERTIES	ONE/HEAT /BATCH	APPD. DRG./ TECH. SPEC.	INSP. REPORT	2	CORRELATION REQD (except disc & plug)
		2. SURFACE DEFECTS	100%	MSS-SP-55	INSP. REPORT	2,1	
		3. DIMENSIONS	100%	APPD. DRG./ TECH. SPEC.	-DO-	-	
1.2	SCREEN	1.CHEMICAL PROPERTIES AND MESH SIZE	ONE PER LOT	APPD. DRGS./ DATA SHEET	LAB REPORT/ INSP. REPORT	2,1	MESH SIZE AND MESH PERFORMANCE DIA. SHALL ALSO BE CHECKED.
2.0	MACHINING						
2.1	ALL COMPONENTS	1. DIMENSIONS	100%	-DO-	INSP. REPORT	-	
		2. SURFACE DEFECTS	100%	MSS-SP-55	-DO-	-	
		3. Hardness of valve Seat	100%	APPD. DRGS./ DATA SHEET ASTM E165	-DO-	2,1	
		4. <del>DISC SEAT</del> & BODY SEAT	100%		-DO-	2,1	
		5. CONTACT SURFACE <del>BETWEEN BODY-GEAT AND DISC</del>	100%	-DO-	INSP. REPORT	2	BATCH WISE
3.0	ASSEMBLY INSPECTION	1. CLEANING & DEBURING	100%	TECH SPEC.	LOG BOOK	-	
		2. DIMENSIONS	100%	-DO-	INSP. REPORT	2,1	
		3. LEAK TIGHTNESS OF BODY	100%	APPD. DRG./ TECH. SPEC./ DATA SHEET	TC/IBR FORMAT	2,1	

<b>BHEL</b>		BIDDER/VENDOR	
Signature: <i>Ganesh K. Prasad</i> Date: 6-2-15		PARTICULARS NAME SIGNATURE DATE	
		BIDDER'S/ VENDOR'S COMPANY SEAL	



	<b>DATASHEET-C</b> <b>STEAM TRAPS</b> <b>2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO. PE-TS-412-100-M010	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 05.02.2015
		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	3 Nos.	NIL
2	Final Distribution(Approved Documents)	4 Nos.	3 Nos.
3	O&M Manuals	6 Nos.	3 Nos.

**2X660 MW ENNORE SEZ STPP**

**VOLUME – III**

**TECHNICAL SCHEDULES**


**FOR**

**STEAM TRAPS**

**SPECIFICATION NO. PE-TS-412-100-M010**



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

	<b>STEAM TRAPS</b> <b>2X660MW ENNORE SEZ STPP</b>		SPECIFICATION NO. PE-TS-412-100-M010	
			VOLUME : III	
			SECTION:	
	REV. NO.: 00	DATE: 05.02.2015		
	SHEET	1	OF	1

**CONTENTS**

<b>SL.NO</b>	<b>TITLE</b>
1	COMPLIANCE SHEET
2	SCHEDULE OF DEVIATIONS
3	SCHEDULE OF DECLARATIONS
4	SCHEDULE OF PRICES

	<b>COMPLIANCE SHEET</b> <b>STEAM TRAPS</b> <b>2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO.:PE-TS-412-100-M010	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 05.02.2015
		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	<b>Accepted</b>	<b>Not Accepted</b>
2.	Quality Plan	<b>Accepted</b>	<b>Not Accepted</b>
3.	Specific Technical requirements of Vol IIB Section-C	<b>Accepted</b>	<b>Not Accepted</b>
4.	Documentation requirement as per Data sheet-C of Vol IIB Section-D	<b>Accepted</b>	<b>Not Accepted</b>

- 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

	<b>COMPLIANCE SHEET</b> <b>STEAM TRAPS</b> <b>2X660 MW ENNORE SEZ STPP</b>	SPECIFICATION NO.:PE-TS-412-100-M010	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 05.02.2015
		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-412-100-M010

VOL III

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

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

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

	<b>TITLE</b>  <b>*SCHEDULE OF DECLARATIONS</b>	SPECIFICATION NO PE-TS-412-100-M010
		VOL III
		SHEET..... OF.....

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

## DECLARATION

I .....certify 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				COMPANY SEAL
NAME	DESIGNATION	SIGNATURE	DATE	