1x200 MW + 1x210 MW GSECL UKAI TG R&M U #3&5 project				
STEAM TRAPS				
BOQ CUM PRICE SCHEDULE				
Sl. No.	**Item Code**	**Item Description**	**UOM**	**Quantity**
Main Supply				
1	100-79031-A	Inverted Bucket Steam Trap as per data sheet	Nos.	2
2	100-79077-A	External Y-Type Strainer as per data sheet	Nos.	2
3	100-79094-A	Thermodynamic Steam Trap-LP- as per data sheet	Nos.	8
Mandatory Spares				
1	100-79031-A	Inverted Bucket Steam Trap as per data sheet	Nos.	2
2	100-79077-A	External Y-Type Strainer as per data sheet	Nos.	2
3	100-79094-A	Thermodynamic Steam Trap-LP- as per data sheet	Nos.	2

1X200 MW + 1X210MW GSECL Ukai TG R&M Unit - 3 & 5

TECHNICAL SPECIFICATION

FOR

STEAM TRAPS

SPECIFICATION NO. PE-TS-499-100-M010
REV. No.: 00

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

	TECHNICAL SPECIFICATION STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010
		REV. No.: 00
		DATE: 14.07.2023
		SHEET 1 OF 1

CONTENTS

	TECHNICAL SPECIFICATION STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010	
		SECTION: -I	
		REV. NO.: 00	DATE: 14.07.2023
		SHEET 1 OF 1	

SECTION-I

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFIC TECHNICAL REQUIREMENTS STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010	
		SECTION: I	
		REV. NO.: 00	DATE: 14.07.2023
		Sheet 1 of 3	

1. GENERAL

1.1 The steam traps shall meet the technical requirements and conform to the requirements of this Section-I and Data sheet A of Section II. However, in the event of contradictions between Section –I & Section –II/ Data sheet A, Section –II/ Data sheet A will prevail.

2. SCOPE OF SUPPLY

2.1 The steam traps (Thermodynamic and Inverted Bucket type along with strainer) shall be supplied as per Data sheet A of Section II. For detail refer the same.

2.2 Commissioning spares, if any.

3. DESIGN REQUIREMENTS AND CONSTRUCTION FEATURES

3.1 The traps covered in the specification shall be of Inverted Bucket & Thermodynamic with auto-drain arrangement conforming to supplier's own proven design.
3.2 All traps shall be with integral/external strainer designed suitably to prevent the internals of the trap from damage due to dirt etc. The strainer shall have a screwed blow-off connection with a removable plug.
3.3 Straining area of strainer shall be kept as minimum four times of the pipe cross-sectional area.
3.4 The traps should be suitable for horizontal/vertical mounting with internals easily accessible and replaceable.
3.5 Arrow showing inlet should be cast on the body of traps and strainers.
3.6 Wherever steam traps are coming under purview of IBR, the relevant stipulations of IBR shall be applicable for compliance.
3.7 The trap cover shall be such that it can be removed without breaking the inlet or discharge pipe.
3.8 On line cleaning of the strainer element shall also be possible.
3.9 Seat diameter for Inverted Bucket trap shall be selected based on the required maximum condensate flow rate & working pressure which will be indicated at ordering stage.
3.10 All traps and strainers shall have socket weld ends as per ANSI B16.11 for size upto 50 NB and butt weld ends as per ASME B16.25 for size above 50 NB.
3.11 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.

4. MATERIALS

4.1 The materials of construction of main parts of traps shall be specified in Data sheet-A.
4.2 The materials of construction of the remaining parts shall be suitable for the service conditions shall be subject to approval of the purchaser.
4.3 Materials used in manufacture of traps shall be of tested quality. The internals components of internals shall be stainless steel construction (AISI 316).

5. TESTING AND INSPECTION

5.1 The items covered under this contract shall be subjected to inspection, testing and quality surveillance as per the quality plans attached with this specification. 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.

5.2 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 (By BHEL/Customer) quality plan without any price implications.

5.3 The Quality Plan enclosed with this specification specify minimum quality control requirement. During contract stage vendor shall furnish this Quality Plan duly signed & stamped for BHEL approval. Quality plans shall be approved by BHEL and customer (as applicable). All inspection and testing, as per approved QP, shall be carried out by BHEL/ BHEL representative and customer (as applicable). In case inspection is by both BHEL and their customer, then the inspection can be carried out jointly or separately, which will be informed later. In case of the foreign bidder, inspection shall be carried out by reputed third party (Lloyds, TUV or equivalent).

5.4 The charges for third party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the item by the bidder. This third party agency shall be approved by BHEL. Bidder to inform the same in the offer and mention the same in Quality Plan.

NOTE: There may be minor changes in quality plan depending on customer/consultant comments which will have to be accommodated by vendor at no extra cost.

6. EXCLUSIONS

Erection & Commissioning of equipment at site

7. SURFACE PREPARATION & PAINTING

7.1 The surface preparation of all exterior and interior surfaces of traps and strainers shall include the following:

a) Removal of oil, grease and dirt.
b) Removal of rust and scale etc.
c) Sand blasting/ shot blasting.

7.2 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 resistance aluminum paint of minimum 40 microns Heat resistant aluminum 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.

8. PACKING INSTRUCTIONS:

a) Each trap and strainer 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 and strainer 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 and strainer 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) All the traps and strainers 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.

	SPECIFIC TECHNICAL REQUIREMENTS STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010	
		SECTION: I	
		REV. NO.: 00	DATE: 14.07.2023
		Sheet 3 of 3	

9. SPARES

a) **Mandatory Spares:** As per Datasheet-A.

10. DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents duly filled, signed and stamped along with the bid:

a) Compliance sheet
b) Documents as per the list indicated in the NIT.

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 them.

11. DELIVERY SCHEDULE & DOCUMENTS TO BE SUBMITTED AFTER AWARD OF CONTRACT:

			1st		2nd		
S.no	**BHEL Drawing No.**	**Drawings Title**	**Vendor Sub.**	**BHEL comment**	**Vendor Sub.**	**BHEL/Customer comment/approval**	**Total Engg. Time**
	STEAM TRAPS						
1	PE-V1-499-100-M033	GA Drg. for Steam Traps	7	5	5	18	35
2	PE-QP-499-142-M022	QP for Steam Traps	7	5	5	18	35

11.1 CATEGORY-A

a) GA Drawing indicating complete cross-sectional arrangement of traps and strainer. Binding dimensions, dismantling clearances, weight and Bill of Material incorporating all material of construction (MOC) of various parts & relevant standard to which MOC confirms to.
b) Quality plans of steam traps (inverted bucket and Thermostatic) and Y- type strainer duly signed and stamped.

Submission/Resubmission of above documents shall be considered for delay analysis by BHEL

11.2 CATEGORY-B

a) Test procedure for functional test of traps (Thermodynamic and Inverted bucket)
Test procedure is required as information.

	TECHNICAL SPECIFICATION STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010	
		SECTION: II	
		REV. NO.: 00	DATE: 14.07.2023
		SHEET 1 OF 1	

SECTION-II

- **DATA SHEET – A**
- **QUALITY PLAN**
- **COMPLIANCE SHEET**

	DATASHEET - A REQUIREMENT OF STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO.: PE-TS-499-100-M010 VOL: II SECTION: D REV:0 DATE: 14.07.2023 SHEET 1 OF 1

SL. NO.	TAG NOS	TYPE	CONNECTING PIPE SIZE SIZE (NB)	PIPE THICKNESS (MM)	SERVICE DESCRIPTION	SERVICE	DESIGN PRESURE (KG/CM2(g)	DESIGN TEMP(deg C)	OPERATING PRESSURE AT INLET OF TRAP (Kg/cm2) (A)	OPERATING PRESSURE ATD/S OF TRAP (Kg/cm2) (A)	MAX. CONDESATE RATE (KG/HR)	FACTOR OF SAFETY	BODY	INTERNALS	END CONN	IBR REQUIRED	TOTAL QUANTITY (MAIN) (FOR ONE UNIT)	TOTAL QUANTITY (MAIN) (FOR TWO UNITS)	MANDATORY SPARES (COMPLETE TRAPS WITH EXTERNAL Y-TYPE STRAINER) (Nos.)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	ST-C	INVERTED BUCKET STEAM TRAP	88.9	5.49	DRAIN LINE	CONTINUOUS	3.5 / VAC	110	1	0.1 (VAC)	390		CS/SS	SS	BW	NO	1	2	2
2	DR-C	EXTERNAL Y-TYPE STRAINER	-	-	DRAIN LINE	CONTINUOUS	3.5 / VAC	105	1	0.1 (VAC)	390		CS/SS	SS	-	NO	1	2	2
3	Contingency Traps	THERMODYNAMIC STEAM TRAP - LP	33.4	4.55	POWER CYCLE	INTERMITTENT	20	210	20	ATM.	10		CS/SS	SS	SW	YES	4	8	2
																	6	**12**	**6**

NOTES:

1. Bidder to offer steam trap and strainer meeting the parameters mentioned in the above Datasheet-A.
2. For detailed material of construction refer page 2 of this DataSheet-A.
3. For item no. 1 and 2, strainer inlet & trap outlet shall be matched with connecting pipe size by bidder. Strainer outlet and trap inlet shall be matched through expander/reducer.
   For item no. 3 Bidder to supply suitable matching pieces to match with connecting pipe size.
   Bidder to consider all reducer/expander as required in the strainer in their scope.
4. Socket Welding (SW) will be as per ASME-B16.11.Butt welding (BW) will be as per ASME B16.25.
5. CS:Carbon Steel, CCS-Cast carbon steel, VAC: Vacuum, ATM: Atmospheric.
6. Equivalent/higher material is acceptable.
7. Mandatory spares for Steam traps and Y type strainers - complete trap/strainer

	DATA SHEET-A STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010	
		SECTION : II	
		REV. NO.: 00	
		Page 2 of 2	DATE: 14.07.2023

1. **Thermodynamic type steam trap with integral strainer**

MATERIAL OF CONSTRUCTION (CS THERMODYNAMIC STEAM TRAP)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body	Carbon Steel (ASTM A 105)
2	Cap and Plug	Carbon Steel (ASTM A 105)
3	Trap Disc	AISI 420 (Equi. CA 40) (Hardened to 40 RC differential hardness shall be maintained for disc and body seats).
4	Gasket	Non asbestos fiber
5	Strainer	SS 304 (20 mesh screen)
8	Name plate	SS 304 (2 mm thick)

NOTE: Equivalent/higher material is acceptable and will be binding to bidders. Bidder to furnish detail MOC of the traps offered along with the offer.

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

MATERIAL OF CONSTRUCTION (INVERTED BUCKET STEAM TRAP)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body and cap/cover	Cast Carbon Steel as per ASTM A216 Gr.WCB
2	Valve, Valve seat	AISI 420 (furnace hardened to minimum 40 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 type
6	Name plate	SS 304 (2 mm thick)
7	Other internals	Stainless steel

MATERIAL OF CONSTRUCTION (EXTERNAL Y-TYPE STRAINER)

S.NO.	PART NAME	MATERIAL REQUIRED
1	Body and Strainer cap/cover	Cast Carbon Steel as per ASTM A216 Gr.WCB
2	Strainer screen	SS 304 (20 mesh screen)
3	Gasket	Non asbestos type
4	Name plate	SS 304 (2 mm thick)

NOTE: Equivalent/higher material is acceptable and will be binding to bidders. Bidder to furnish detail MOC of the traps offered along with the offer.

MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS	QUALITY PLAN		SPEC. NO.: PE-TS-499-100-M010	DATE: 13.07.2023
	CUSTOMER: GSECL		QP NO.: PE-QP-499-100-M010	DATE: 13.07.2023
	PROJECT: 1x200 MW + 1x210 MW Ukai TG R&M Unit - 3 & 5		PO NO.: LATER	DATE:
	ITEM: STEAM TRAPS (THERMOSTATIC / BIMETTALIC OR THERMODYNAMIC)	SYSTEM: POWER PIPING	SECTION: II	PAGE 1 OF 2

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	B/C				D	M	B	C	
1	2	3	4	5	6		7	8	9		10			11
1.0 RAW MATERIAL INSPECTION														
1.1	Body, Cap/Cover Thermodynamic: Disk & Plug Thermostatic: Bimetallic Assembly, Valve, Valve Seat, Plug	Physical & Chemical Properties	MA	Physical & Chemical Tests	One / Heat	---	Appd. Drg./ Material Std.	Appd. Drg./ Material Std.	MTC	√	V	V	-	Body & Cap/Cover should carry Heat Marks for co-relation with Mill Test Certificates
		Surface Defects	MA	Visual	100%	---	MSS-SP-55	MSS-SP-55	IR	√	P	V	-	
1.2	Screen (Strainer)	Chemical Properties	MA	Chemical Test	One / Sheet	---	Appd. Drg./ Rel. Std.	Appd. Drg./ Rel. Std.	TC	√	P	V	-	
		Mesh Size / Perforation Dia.	MA	Measurement		---	Appd. Drg.	Appd. Drg.	IR	√	P	V	-	
2.0 IN-PROCESS INSPECTION														
2.1	All Components (After Machining)	Dimensions	MA	Measurement	100%	---	Mfg. Drg.	Mfg. Drg.	Log Book	-	P	V	-	
		Surface Defects	MA	Visual	100%	---	-	Free from Defects	Log Book	-	P	V	-	
2.2	Thermodynamic: Body Seat & Disc Thermostatic: Valve & Valve Seat	Hardness of Disc	CR	Hardness Test	100%	---	Appd. Drg./ Rel. Std.	Appd. Drg./ Rel. Std.	TC	√	P	V	-	
		Surface Defect	CR	LPT	100%	---	ASTM E165	No Defects	NDT Report	√	P	V	-	
		Surface Finish	CR	Blue Matching	100%	---	Uniform Metal to Metal Contact		IR	√	P	V	-	
2.3	End Connection	Surface Defects	CR	LPT	100%	---	ASTM E165	No Defects	NDT Report	√	P	V	-	
3.0 TESTING														
3.1	Cap/Cover	Alignment	MA	Visual	100%	---	Manufacturer's Std.	Proper Fitting	Log Book	-	P	V	-	
3.2	Valve & Valve Seat (Thermostatic only)	Leak Tightness	CR	Pneumatic/ Hydraulic	100%	---	Appd. Drg.	Appd. Drg.	TR	√	P	V	-	
3.3	Complete Assembly	Leak Tightness of Body	CR	Hydraulic	100%	Refer Note '1'	Appd. Drg.	No Leakage	TC/ IBR Cert.	√	P	W#	-	# If IBR is applicable, in addition to witness, IBR certificate to be verified.
		Function of Trap	CR	Performance Test*	100%	Refer Note '1'	Manufacturer's Test procedure	Smooth & Effective Operation	TR	√	P	W	-	*Performance testing in simulated condition as per test procedure
		Condensate Discharge (Flow Capacity of Trap)	CR	Discharge Flow	1 per Pr. Rating & Orifice Size	---	Flow Capacity Charts/ Type Test Reports	Design Flow Capacity	Compliance Report/ Certificate	√	P	V	-	

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL						
ENGINEERING			QUALITY			
	Sign & Date	Name		Sign & Date	Name	
Checked by:	Rohit Chawla	Rohit Chawla	Checked by:	Ashish Panigrahi	Ashish Panigrahi	
Reviewed by:	Prince Malik	Prince Malik	Reviewed by:	HARISH KUMAR	Harish Kumar	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS	QUALITY PLAN		SPEC. NO.: PE-TS-499-100-M010	DATE: 13.07.2023
	CUSTOMER: GSECL		QP NO.: PE-QP-499-100-M010	DATE: 13.07.2023
	PROJECT: 1x200 MW + 1x210 MW Ukai TG R&M Unit - 3 & 5		PO NO.: LATER	DATE:
	ITEM: STEAM TRAPS (THERMOSTATIC / BIMETTALIC OR THERMODYNAMIC)	SYSTEM: POWER PIPING	SECTION: II	PAGE 2 OF 2

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9		10			11
					M	B/C				D	M	B	C	
4.0 FINAL INSPECTION														
4.1	Complete Trap	End Connection & Overall Dimensions, Fixing of Nameplate with Tag Nos.	CR	Measurement, Visual	100%	Refer Note '1'	Appd. Drg.	Appd. Drg.	IR	√	P	W	-	
4.2	Painting	Surface Preparation & Paint Thickness (DFT)	MA	Visual, Measurement	100%	---	Appd. Drg.	Appd. Drg.	IR	√	P	V	-	
4.3	Packing	Packing Soundness	MA	Visual	100%	---	Manufacturer's Std. / Appd. Packing Procedure	Manufacturer's Std. / Appd. Packing Procedure	IR	√	P	V	-	

NOTES:

1. 10% or min. 2 nos. at random, whichever is higher, by BHEL/Customer for each type, size & rating.
2. Welding and Impregnation of casting are not permitted.
3. The latest revision/year of issue of all the standard indicated in the QP shall be referred.

Legends:

D: Documentation; Records identified with "Tick"(√), shall be essentially included by supplier in QA Documentation
M: Supplier/ Manufacturer/ Sub-Supplier
B: Main Supplier/BHEL/ Third Party Inspection agency
C: Customer
TPIA: Third Party Inspection Agency
DFT: Dry Film Thickness
MA: Major Characteristic
CR: Critical Characteristic
TC: Test Certificate
TR: Test Report
MTC: Mill Test Certificate
P: Perform
W: Witness
V: Verification
IR: Inspection Report
ADS: Actuator Data Sheet
HT: Heat Treatment
LPT: Liquid Penetrant Test
UT: Ultrasonic Test
RT: Radiography Test
MPI: Magnetic Particle Inspection

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL						
ENGINEERING			QUALITY			
	Sign & Date	Name		Sign & Date	Name	
Checked by:	Rohit Chawla	Rohit Chawla	Checked by:	Ashish Panigrahi	Ashish Panigrahi	
Reviewed by:	Prince Malik	Prince Malik	Reviewed by:	HARISH KUMAR	Harish Kumar	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS	QUALITY PLAN		SPEC. NO.: PE-TS-499-100-M010	DATE: 13.07.2023
	CUSTOMER: GSECL		QP NO.: PE-QP-499-100-M010	DATE: 13.07.2023
	PROJECT: 1x200 MW + 1x210 MW Ukai TG R&M Unit - 3 & 5		PO NO.: LATER	DATE:
	ITEM: STEAM TRAPS (INVERTED BUCKET) & Y-TYPE STEAM STRAINER	SYSTEM: POWER PIPING	SECTION: II	PAGE 1 OF 2

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9		10			11
					M	B/C				D	M	B	C	
1.0 RAW MATERIAL INSPECTION														
1.1	Body, Cap/Cover Applicable for Traps only: Valve, Valve Seat, Bucket, Valve Lever, Bucket Clip & Weight	Physical & Chemical Properties	MA	Physical & Chemical Tests	One / Heat	---	Appd. Drg./ Material Std.	Appd. Drg./ Material Std.	MTC	√	V	V	-	Body & Cap/Cover should carry Heat Marks for co-relation with Mill Test Certificates
		Surface Defects	MA	Visual	100%	---	MSS-SP-55	MSS-SP-55	IR	√	P	V	-	
1.2	Screen (Integral/Y-Type Strainer)	Chemical Properties	MA	Chemical Test	One / Sheet	---	Appd. Drg./ Rel. Std.	Appd. Drg./ Rel. Std.	TC	√	P	V	-	
		Mesh Size / Perforation Dia.	MA	Measurement		---	Appd. Drg.	Appd. Drg.	IR	√	P	V	-	
2.0 IN-PROCESS INSPECTION														
2.1	All Components (After Machining)	Dimensions	MA	Measurement	100%	---	Mfg. Drg.	Mfg. Drg.	Log Book	-	P	V	-	
		Surface Defects	MA	Visual	100%	---	-	Free from Defects	Log Book	-	P	V	-	
2.2	Valve, Valve Seat of Traps	Hardness	CR	Hardness Test	100%	---	Appd. Drg./ Rel. Std.	Appd. Drg./ Rel. Std.	TC	√	P	V	-	
		Surface Defect	CR	LPT	100%	---	ASTM E165	No Defects	NDT Report	√	P	V	-	
		Surface Finish	CR	Blue Matching	100%	---	Uniform Metal to Metal Contact		IR	√	P	V	-	
2.3	End Connection	Surface Defects	CR	LPT	100%	---	ASTM E165	No Defects	NDT Report	√	P	V	-	
3.0 TESTING														
3.1	Cap/Cover	Alignment	MA	Visual	100%	---	Manufacturer's Std.	Proper Fitting	Log Book	-	P	V	-	
3.2	Valve, Valve Seat of Traps	Leak Tightness	CR	Pneumatic/ Hydraulic	100%	---	Appd. Drg	Appd. Drg.	TR	√	P	V	-	
3.2	Complete Assembly	Leak Tightness of Body (Trap, Strainer)	CR	Hydraulic	100%	Refer Note '1'	Appd. Drg.	No Leakage	TC/ IBR Cert.	√	P	W#	-	# If IBR is applicable, in addition to witness, IBR certificate to be verified.
		Function of Trap	CR	Performance Test*	100%	Refer Note '1'	Manufacturer's Test procedure	Smooth & Effective Operation	TR	√	P	W	-	*Performance testing in simulated condition as per test procedure
		Condensate Discharge (Flow Capacity of Trap)	CR	Discharge Flow	1 per Pr. Rating & Orifice Size	---	Flow Capacity Charts/ Type Test Reports	Design Flow Capacity	Compliance Report/ Certificate	√	P	V	-	

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Checked by:	Rohit Chawla	Rohit Chawla	Checked by:	Ashish Panigrahi	Ashish Panigrahi
Reviewed by:	Prince Malik	Prince Malik	Reviewed by:	HARISH KUMAR	Harish Kumar

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS	QUALITY PLAN		SPEC. NO.: PE-TS-499-100-M010	DATE: 13.07.2023
	CUSTOMER: GSECL		QP NO.: PE-QP-499-100-M010	DATE: 13.07.2023
	PROJECT: 1x200 MW + 1x210 MW Ukai TG R&M Unit - 3 & 5		PO NO.: LATER	DATE:
	ITEM: STEAM TRAPS (INVERTED BUCKET) & Y-TYPE STEAM STRAINER	SYSTEM: POWER PIPING	SECTION: II	PAGE 2 OF 2

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1	2	3	4	5	6		7	8	9		10			11
					M	B/C				D	M	B	C	
4.0 FINAL INSPECTION														
4.1	Complete Trap & Strainer	End Connection & Overall Dimensions, Fixing of Nameplate with Tag Nos.	CR	Measurement, Visual	100%	Refer Note '1'	Appd. Drg.	Appd. Drg.	IR	√	P	W	-	
4.2	Painting	Surface Preparation & Paint Thickness (DFT)	MA	Visual, Measurement	100%	---	Appd. Drg.	Appd. Drg.	IR	√	P	V	-	
4.3	Packing	Packing Soundness	MA	Visual	100%	---	Manufacturer's Std. / Appd. Packing Procedure	Manufacturer's Std. / Appd. Packing Procedure	IR	√	P	V	-	

NOTES:

1. 10% or min. 2 nos. at random, whichever is higher, by BHEL/Customer for each type, size & rating.
2. Welding and Impregnation of casting are not permitted.
3. The latest revision/year of issue of all the standard indicated in the QP shall be referred.

Legends:

D: Documentation; Records identified with "Tick"(√), shall be essentially included by supplier in QA Documentation
M: Supplier/ Manufacturer/ Sub-Supplier
B: Main Supplier/BHEL/ Third Party Inspection agency
C: Customer
TPIA: Third Party Inspection Agency
DFT: Dry Film Thickness
MA: Major Characteristic
CR: Critical Characteristic
TC: Test Certificate
TR: Test Report
MTC: Mill Test Certificate
P: Perform
W: Witness
V: Verification
IR: Inspection Report
ADS: Actuator Data Sheet
HT: Heat Treatment
LPT: Liquid Penetrant Test
UT: Ultrasonic Test
RT: Radiography Test
MPI: Magnetic Particle Inspection

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL						
ENGINEERING			QUALITY			
	Sign & Date	Name		Sign & Date	Name	
Checked by:	Rohit Chawla	Rohit Chawla	Checked by:	Ashish Panigrahi	Ashish Panigrahi	
Reviewed by:	Prince Malik	Prince Malik	Reviewed by:	HARISH KUMAR	Harish Kumar	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

BHEL	COMPLIANCE SHEET STEAM TRAPS 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5	SPECIFICATION NO. PE-TS-499-100-M010 SECTION: II REV: 0 DATE: 14.07.2023 SHEET 1 OF 1

I hereby comply/not comply (*) to all the requirements of this technical specification in totality.

*** In case the bidder does not comply to the technical specification, the deviations shall be explicitly listed in**

TABLE-1 below in case of procurement through GeM portal

Or else

Cost of Withdrawal sheet of GCC

TABLE – 1

S. NO.	VOLUME / SECTION	PAGE NO.	CLAUSE NO.	COMPLETE DESCRIPTION OF DEVIATION	REASON FOR QUOTING DEVIATION
TECHNICAL DEVIATIONS ONLY					

NOTES FOR TABLE-1:

1. All the bidders have to list out Technical deviations (if any) in detail in the above format.
2. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
3. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at the discretion of the Purchaser.
4. Bidders to note that any Technical deviation not listed above and requested after Part-I opening shall not be considered.

PARTICULARS OF BIDDER'S AUTHORISED REPRESENTATIVES		
NAME	**DESIGNATIONS**	**SIGN & DATE**

	PRE - QUALIFYING REQUIREMENTS	DOCUMENT NO: PE-TS-499-100-M056
		REVISION NO: 00 DATE: 14.07.2023
		SHEET: **1** of **3**

Project: 1x200 MW + 1x210MW GSECL Ukai TG R&M Unit - 3 & 5

Package: Steam Traps

CRITERIA FOR EVALUATION (TECHNICAL):

1. Technical Pre-Qualifying Requirements:

1.1 The bidder should have designed, in-house manufactured, tested, inspected and supplied traps & strainers (as mentioned below) for use in a power plant or for similar application.

CS/SS/AS thermodynamic steam traps of min. 15NB size (with integral strainer);
CS/SS/AS Inverted bucket / Ball float steam traps of min. 20NB size (with external 'Y' type strainer)

1.2 The item(s) mentioned in point 1.1 should have performed successfully in similar installations for at least one year. To establish meeting this requirement, the bidder shall conform to any one of the following clauses:

(i) Execution of two purchase orders for different End-users with the item(s) performing successfully for one (1) year from date of commissioning to the date of bid submission as defined in Notice Inviting Tender (NIT) by BHEL. Different projects of a customer shall be considered as different End-users.

(ii) Minimum one (1) repeat contract from two (2) different Purchasers (i.e. 2 no. of Purchase orders from each purchaser). A contract shall be considered as repeat, when the second contract is given by the same purchaser after lapse of minimum one (1) year from supply completion of first contract.

(iii) Execution of one (1) purchase order as per sl. no. (i) above from one End-user and one (1) repeat contract from another Purchaser as per sl. no. (ii) above.

(iv) Three (3) repeat contracts from one (1) Purchaser. Second and third repeat contract shall be after lapse of minimum one (1) & two (2) years respectively from supply completion of first contract.

1.3 The bidder to furnish the following documents, as applicable, in support of the above:

a) For point 1.2(i): Performance certificates from End-user (duly signed & dated) specifying that the product is performing successfully for one (1) year from date of commissioning along with correlated purchase order(s).

b) For point 1.2 (ii) & (iv): Purchase Order(s), Material Dispatch Clearance Certificate (MDCC)/ Material Receipt Certificate (MRC)/Lorry Receipt (LR)/ Supply Invoice.

1.4 In addition to above, bidder should have the following for all type/size/material of traps & strainers of BHEL requirement as mentioned in Data Sheet-A of Technical Specification:

PREPARED BY:	REVIEWED BY:	APPROVED BY:
Rohit Chawla Digitally signed by Rohit Chawla DN: cn=Rohit Chawla, o=BHEL, ou=PEM, email=rchawla@bhel.in, c=IN Date: 2023.07.15 10:13:30 +05'30'	Prince Malik Digitally signed by Prince Malik DN: cn=Prince Malik, o=BHEL, ou=PEM-MPL, email=princemalik@bhel.in, c=IN Date: 2023.07.15 12:59:44 +05'30'	B K Agarwal Digitally signed by B K Agarwal DN: cn=B K Agarwal, o=BHEL, ou=PEM, email=bimal@bhel.in, c=IN Date: 2023.07.15 13:31:31 +05'30'
NAME: Rohit Chawla **DESIGNATION:** Manager **DEPT.:** PS-PEM/ MPL	**NAME:** Prince Malik **DESIGNATION: Sr.** Manager **DEPT.:** PS-PEM/ MPL	**NAME**:BK AGARWAL **DESIGNATION:** DH(MPL)

a) Capability of designing and manufacturing of the item(s).

b) In-house testing facilities for carrying out tests as per relevant standards & Quality plan. In case, the in-house testing facilities are not available, then bidder shall furnish undertaking that test(s) will be carried out from govt. approved lab or test house recognized by reputed customers.

Bidder to submit supporting documents (Purchase Order (s)/ Certificate indicating capacity and details/ undertaking of manufacturing & testing facilities) for point (a) & (b) above.

1.5 To establish business continuity, bidder is required to submit at least two (2) Purchase orders for any type of traps (thermodynamic/thermostatic/inverted bucket/ball float) and 'Y type- strainer in last 3 (three) years prior to the date of bid submission defined by BHEL-PEM.

2.0 Bidder to also comply with below mentioned general points:

2.1 Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:

a) If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.

b) If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.

c) If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.

Note: If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. and warranty/ guarantee shall be submitted along with the offer.

2.2 Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of contract(s).

2.3 Consideration of offer shall be subject to customer's approval of bidders, if applicable.

2.4 Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.

	PRE - QUALIFYING REQUIREMENTS	DOCUMENT NO: PE-TS-499-100-M056
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2.5 Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

2.6 After satisfactory fulfillment of all the above criteria/requirement, offer shall be considered for further evaluation as per NIT and all the other items of the tender.

2.7 Bidder to ensure that Third Party/customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/ certificate issuing authority such as name & designation of issuing authority and its organization contact number and email-id etc. In case the same found not available, purchaser has right to reject such document from evaluation.

PREPARED BY:	REVIEWED BY:	APPROVED BY:
Rohit Chawla Digitally signed by Rohit Chawla DN: cn=Rohit Chawla, o=BHEL, ou=PEM, email=rchawla@bhel.in, c=IN Date: 2023.07.15 10:13:58 +05'30'	Prince Malik Digitally signed by Prince Malik DN: cn=Prince Malik, o=BHEL, ou=PEM-MPL, email=princemalik@bhel.in, c=IN Date: 2023.07.15 13:02:06 +05'30'	B K Agarwal Digitally signed by B K Agarwal DN: cn=B K Agarwal, o=BHEL, ou=PEM, email=bimal@bhel.in, c=IN Date: 2023.07.15 13:32:16 +05'30'
NAME: Rohit Chawla **DESIGNATION:** Manager **DEPT.:** PS-PEM/ MPL	**NAME:** Prince Malik **DESIGNATION: Sr.** Manager **DEPT.:** PS-PEM/ MPL	**NAME**:BK AGARWAL **DESIGNATION:** DH(MPL)