

**2X660MW SURATGARH STPP  
(STAGE-V, UNIT#7&8)**


**VOLUME – IIB**

**TECHNICAL SPECIFICATION  
FOR  
BALL VALVES**

**SPECIFICATION NO. PE-TS-392-100-M004**



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

	<b>TITLE:</b>  <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.

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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 Ball valves complete with all accessories as per the requirements mentioned in different sections of the specification for 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8).

### 2. GENERAL TECHNICAL INSTRUCTIONS

- 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.
- The omission of specific reference to any component/ accessories necessary for the proper performance of Ball valves shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of Ball valves at quoted prices.
- Design/ drawings/ data sheets etc. shall be subject to approval of BHEL as per specification, in the event of order.
- 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.
- 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

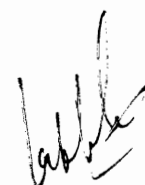
*[Handwritten Signature]*


	<b>TECHNICAL SPECIFICATION</b> <b>BALL VALVES</b> <b>2X660MW SURATGARH STPP</b> <b>(STAGE-V, UNIT#7&amp;8)</b>	SPECIFICATION NO. PE-TS-392-100-M004	
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## PROJECT INFORMATION

Project information will be provided later. 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 binding 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 Prabat Nagar, Suratgarh, Sriganganagar district, Rajasthan having latitude and longitude of 29°10' N and 74°01' E respectively.




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## SECTION-C

### SPECIFIC TECHNICAL REQUIREMENTS



	<b>SPECIFIC TECHNICAL REQUIREMENTS</b>		SPECIFICATION NO. PE-TS-392-100-M004
	<b>BALL VALVES</b>		SECTION C
	<b>2X660MW SURATGARH STPP</b>		REV. NO.: 00
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## 1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the standard technical specification and Data sheet A of Section D. In addition, the requirements of this Section-C shall also be complied with. However, wherever the details given in standard technical specification of Section-D and Data sheet 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 valves shall, in general, be as per the attached standard Technical specification for Valves, and Data sheet A of Vol. II B Section D.

## 2. SCOPE OF SUPPLY

- 2.1 The valves complete with all accessories shall be supplied as per Data sheet A of Section D. For detail refer the same. Each valve (quantity and other details specified in Data Sheet-A) shall be complete with the following accessories.
- 2.2 Commissioning spares, if any.
- 2.3 Set of special tools and tackles if required for the maintenance, erection etc. of the equipment supplied.
- 2.4 Mandatory spares as applicable depending upon the project requirement.
- 2.5 Various drawings, datasheets, operation and maintenance manuals etc., as specified in Data Sheet-C.

## 3. EXCLUSIONS:


The following are excluded from the bidder's scope:

- a) Counter flanges and their nuts and bolts.
- b) 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.



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## 5 GALVANIZING REQUIREMENT (FOR CARBON STEEL):

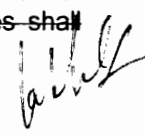
Carbon steel valve bodies and all other carbon steel valve parts including handle lever & lever adopter shall be degreased, thoroughly cleaned, pickled & rinsed as specified in IS: 2629. Then all these carbon steel body valves & parts shall be hot dip galvanized as per IS: 2629. The minimum thickness of galvanizing shall be 50 minimum microns.


## 6 PACKING INSTRUCTIONS:

- 6.1 Each valve 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.
- 6.2 The valve shall be dispatched in total assembled form.
- 6.3 Body ends shall be suitably sealed to protect them against damage during transit and storage.
- 6.4 A thin sheet steel circular blanking plate of a diameter 6mm less than the bolt holes inner P.C.D. shall be firmly fixed to the flange faces by the application of adhesive after first ensuring that the flanges faces have been thoroughly degreased. A thin coat of adhesive shall be applied to the flange face and the blanking plate and then allowed to dry for 15-20 minutes. The coated face of the blanking plate should then be offered up to the face of the flange taking care that the plate is concentric with the flange. Firm pressure shall be applied to ensure intimate contact between plate and flange. A wooden blank should then be bolted to the flange using a minimum of 4 bolts.
- 6.5 Valve Tag Nos. will be tagged to valve body and same shall be incorporated in all the dispatch documents.
- 6.6 Proper care shall be taken to avoid damage to the painted surface during transit.
- 6.7 Vendor to provide soft copy of photos/snaps of duly packed valve. The soft copies to be provided by vendor after final inspection of valves. Clearance for despatch of valves will be given only after satisfactory packing conditions of valves from vendors work.
- 6.8 All the valves 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.

## 7 SPARES

- a) **Mandatory Spares:** These shall be as per Data Sheet-A.
- b) **Recommended Spares:** List of recommended spares for 3-year reliable operation along with the unit price shall be indicated in the schedule of prices for recommended spares enclosed in Volume III. Cost of Recommended spares shall not be included in the base price.



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- c) Order for the spares may be placed simultaneously or otherwise at the option of purchaser.


## 8 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) Schedules of Price & Unit Price for each project.
- d) Schedule of declaration.


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

	<b>STANDARD TECHNICAL SPECIFICATION FOR BALL VALVES</b>		SPECIFICATION NO. PE-SS-999-100-M004	
			VOLUME. II B	
			SECTION D	
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## 1 GENERAL

This specification covers the design, materials, construction features, manufacture and testing of Ball valves at Vendor's or/ and sub-Vendor's works inclusive of painting and packing requirements.

## 2 CODES AND STANDARDS

- 2.1 The design, materials, construction features, manufacture, inspection and testing of valves shall conform to the latest applicable codes and standards.
- 2.2 The valves covered under this specification shall be designed and tested as per BSEN ISO 17292 (replaces BS: 5351).
- 2.3 In case of any conflict between the above codes/ standards and this specification, the latter shall prevail and in case of any further conflict in the matter, the interpretation of the specification by the Engineer shall be final and binding.

## 3 DESIGN REQUIREMENTS

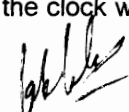
- 3.1 These valves shall be used for non-corrosive media like compressed air systems (i.e. service air, instrument air etc) and shall be of non-fire safe design.
- 3.2 Valves shall be selected in the appropriate rating based on the pressure/temperature conditions and service media mentioned in Data sheet-A of Vol IIB Section D.
- 3.3 Valves with screwed/socket welding ends up to size of 50mm NB shall be in 3 piece construction and valves of size 65mm NB and above with flanged/butt welding ends shall be short body design and in 3 piece/2 piece construction.


## 4 Materials

- 4.1 The materials of construction of main parts Ball valves shall be as specified in Data Sheet-A.
- 4.2 The materials of construction of the remaining parts shall be as per the relevant standard governing the valves. These materials shall be subjected to approval.
- 4.3 Material used in manufacture of valve shall be of tested quality.

## 5 CONSTRUCTION FEATURES

- 5.1 All valves with screwed ends shall have screwed female parallel pipe threads as per IS: 554/ASME B 1.20.1
- 5.2 All valves with flanged ends shall have raised face flanges and drilling details as per ANSI B16.5
- 5.3 Valves with socket welded and butt welded ends shall have extended pieces. These extended pieces shall be connected through screwed ends on one side and the other end will be suited to match the pipe depending on the type of end details i.e. socket/butt welds ends. Socket ends and Butt weld ends shall be as per ASME B16.11 and ASME B16.25 respectively.
- 5.4 All valves up to 50mm NB shall be of reduced port and 65mm and above shall be of full bore.
- 5.5 Valves of size 200 NB & above shall be gear operated.
- 5.6 Body seats shall be of renewable type and shall be of moulded PTFE completely contained and shall provide leak tightness in either direction and be suitable for service temperatures.
- 5.7 All the valves shall be provided with integral stop on body limiting quarter turn operation.
- 5.8 All the ball valves shall be of tight shut off type and the lever shall be designed such that lever is parallel to the flow direction when the valve is in open position.
- 5.9 All the ball valves fitted with a steel lever shall be closed by turning the lever in the clockwise direction. The direction of closing the valve and "Shut" position shall be marked on the valves. The lever shall have plastic covering. For gear operated valves the hand wheel shall clearly marked Open & Shut with arrows indicating the direction of rotation which they refer. Valves shall be closed by rotating the hand wheel in the clock wise direction when looking at the face of the hand wheel.



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- 5.10 Each lever / hand wheel of the valve shall be fitted with a circular/ rectangular nameplate of SS material indicating the purchaser's Valve Tag No. and service description.

## 6 MANUFACTURE OF VALVES

- 6.1 Valve castings shall be procured from foundries observing strict quality control and approved by reputed customers.
- 6.2 Particular care shall be taken to ensure that all foundry sand and loose material is properly removed from castings by fettling before the valve's manufacture is started.

## 7 TESTING AND INSPECTION

- 7.1 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.
- 7.2 The minimum NDT/testing and inspection requirements for valve 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.
- 7.3 Carbon steel valves shall be hydraulically tested for leak tightness before galvanizing the valve body and end pieces (pressure parts).
- 7.4 Hydrostatic/Air Tests

- a) All the valves shall be tested hydraulically for strength and tightness of seats at the pressures as mentioned in BSEN ISO 17292
- b) No leakage shall be allowed for any size of the valve covered under this specification.

- 7.5 Dimensional and functional checks shall be carried out.

- 7.6 Protection against corrosion.

For carbon steel valves, body and all other parts including handle lever & lever adopter shall be degreased, thoroughly cleaned, pickled & rinsed as specified in IS: 2629. Then all these carbon steel body valves & parts shall be hot dip galvanized as per IS: 2629. The minimum thickness of galvanizing shall be 50 microns minimum.

## 8 CLEANING AND PROTECTION FOR DESPATCH:

- 8.1 Valves with screwed and socket welding ends shall be protected by means of polythene caps/rubber and protectors to prevent damage to ends & also to avoid foreign material entering the valve while shipment & storage.
- 8.2 For valves with flanged ends, a thin sheet steel circular blanking plate of a diameter 6mm less than the bolt holes inner P.C.D. shall be firmly fixed to the flange faces by the application of adhesive after first ensuring that the flange faces have been thoroughly degreased. A thin coat of adhesive shall be applied to the flange face and the blanking plate and then allowed to dry for 15-20 minutes. The coated face of the blanking plate should then be offered up to the face of the flange taking care that the plate is concentric with the flange. Firm pressure shall be applied to ensure intimate contact between plate and flange. A wooden blank should then be bolted to the flange using a minimum of 4 bolts.


- 9 Valve Tag Nos. shall also be incorporated in all the dispatch documents.



DATA SHEET A BALL VALVE EXCISE DUTY FORM 10 (STANDARD UNIT 7)																							
Sl.No.	VALVE TAG NOS.	TYPE OF VALVE	SIZE (MM) NB	OPERATION	DESIGN		SERVICE	RATING, DESIGN & TESTING CODE	BODY MATERIAL	TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN		MAIN VALVES QTY WITHOUT COMMISSIONING SPARES (Nos.)	COMMISSIONING SPARES			MANDATORY SPARES AS PER CLAUSE A-1.3.5 OF SCHEDULE-F8 (LIST & QUANTITY OF MANDATORY SPARES)				REMARKS
					PRESSURE (KG/CM2(g))	TEMP (deg C)							(MM)	(MM)		BODY SEAL (SETS)	GLAND PACKIN G (SETS)	STEM SEAL (SETS)	COMPLETE VALVE (5% OF TOTAL VALVES BELOW 65NB) (Nos.)	BALL (2 Nos. FOR ALL VALVES 65NB & ABOVE FOR EACH TYPES/ RATING) (Nos.)	STEM (2 Nos. FOR ALL VALVES 65NB & ABOVE FOR EACH TYPES/ RATING) (Nos.)	GLAND PACKING (50% OF TOTAL VALVES 65NB & ABOVE) (SETS)	
1	IA-5 TO IA-7, IA-9 TO IA-15, IA-17, IA-19 TO IA-22, IA-24 TO IA-27, IA-30 TO IA-34, IA-36 TO IA-38, IA-41, IA-42, IA-44, IA-45, IA-50, IA-51, IA-53 TO IA-56, IA-61, IA-62, IA-64, IA-65, IA-68, IA-69, IA-145 TO IA-231 (EACH 1 NO.)	BALL	15	MAN	8.8	50	IA SYSTEM	CL 800 OF BSEN ISO 17292	FORGED CARBON STEEL AS PER ASTM A105	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	HOT DIP GALVANIZED	21.8	3.2	130	13	13	13	7	0	0	0	
2	IA-4, IA-8, IA-16, IA-18, IA-23, IA-28, IA-29, IA-35, IA-39, IA- 40, IA-43, IA-49, IA-52, IA-60, IA-63, IA-66, IA-67, IA-70, IA-72 TO IA-74, IA-76 TO IA-78, IA- 89 TO IA-107, IA-108 TO IA-144, SA-21 TO SA-56, SA-58 TO SA-62, SA-64 TO SA-68, SA-70 TO SA-72, SA-75 TO SA-79, SA-85 TO SA-120 (EACH 1 NO.)	BALL	25	MAN	8.8	50	IA & SA SYSTEM	CL 800 OF BSEN ISO 17292	FORGED CARBON STEEL AS PER ASTM A105	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	HOT DIP GALVANIZED	34.2	4.0	170	17	17	17	9	0	0	0	
3	IA-57 TO IA-59, IA-71, IA-75, IA-86 TO IA-88, IA-238 TO IA-241, SA-43, SA-69, SA-11 TO SA-20, SA-43, SA-84, SA-121 TO SA-126 (EACH 1 NO.)	BALL	50	MAN	8.8	50	IA & SA SYSTEM	CL 800 OF BSEN ISO 17292	FORGED CARBON STEEL AS PER ASTM A105	SS 316	SCREWED AS PER IS: 554 FEMALE PARALLEL	HOT DIP GALVANIZED	60.8	4.5	32	4	4	4	2	0	0	0	
4	IA-79, IA-83, IA-235, IA-236, IA-237, SA-73, SA-74, SA-81, SA-82, SA-3, SA-127, SA-128, SA-129 (EACH 1 NO.)	BALL	100	MAN	8.8	50	IA & SA SYSTEM	CL 150 OF BSEN ISO 17292	CAST CARBON STEEL AS PER ASTM A216 Gr. WCB	SS 316	FLANGED AS PER ASME B16.5 R/F	HOT DIP GALVANIZED	115	5.4	13	2	2	2	0	2	2	4	
5	IA-1 TO IA-3, IA-80, IA-81, IA-232, IA-233, IA-234, SA-1, SA-2, SA-3, SA-57, SA-130 (EACH 1 NO.)	BALL	150	MAN	8.8	50	IA & SA SYSTEM	CL 150 OF BSEN ISO 17292	CAST CARBON STEEL AS PER ASTM A216 Gr. WCB	SS 316	FLANGED AS PER ASME B16.5 R/F	HOT DIP GALVANIZED	166.5	5.4	13	2	2	2	0	2	2	4	
TOTAL													358	38	38	38	18	4	4	8			

**NOTES:**  
 1. LEGENDS: MAN=MANUAL, IA=INSTRUMENT AIR, SA=SERVICE AIR  
 2. COMMISSIONING SPARES:  
 SETS OF BODY SEAL, GLAND PACKING & STEM SEAL: 10% OF MAIN VALVE QUANTITY OR MINIMUM 2 NOS. OF EACH TYPE, SIZE, CLASS AND MATERIAL OF GATE/ GLOBE VALVE.  
 3. MAIN VALVE PRICES SHALL BE EXCLUSIVE OF COST OF COMMISSIONING SPARES PRICES.  
 4. BIDDER IS REQUIRED TO QUOTE UNIT PRICE OF EACH & EVERY ITEM UNDER COMMISSIONING SPARES & MANDATORY SPARES SEPARATELY & INDIVIDUALLY I.e. PRICES OF ALL COMMISSIONING SPARES & MANDATORY SPARES SHALL NOT BE CLUBBED INCLUDED IN THE UNIT PRICES OF MAIN VALVES.  
 \*\*\* For detailed materials of construction refer attached sheet 2 of Data-sheet-A (Data sheet for material of construction) for Ball Valves.

  
 signature of the bidder with name, designation, date and company's seal

	<b>DATA SHEET-A</b> <b>BALL VALVES</b> <b>2X660MW SURATGARH STPP</b> <b>(STAGE-V, UNIT#7&amp;8)</b>	SPECIFICATION NO. PE-TS-392-100-M004	
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**MATERIAL OF CONSTRUCTION  
(BALL VALVES)**

SL. NO.	PART NAME	MATERIAL (CARBON STEEL BODY)
1	BODY AND END PIECES	FORGED CARBON STEEL AS PER ASTM A 105 (UPTO 50 NB) (HOT DIP GALVANISED)  CAST CARBON STEEL AS PER ASTM A 216 Gr. WCB (ABOVE 50 NB) (HOT DIP GALVANISED)
2	BALL, STEM AND GLAND	STAINLESS STEEL AS PER AISI-316 ( BALLMIRROR FINISH)
3	SEAT RING	VIRGIN UNFILLED OIL FREE PTFE
4	BODY SEAL, STEM SEAL AND GLAND PACKING	VIRGIN UNFILLED OIL FREE PTFE
5	BODY STUD	AISI 304
6	BODY NUT	AISI 304
7	GLAND NUT	AISI 304
8	LEVER	CARBON STEEL (HOT DIP GALVANISED) WITH PLASTIC SLEEVE GRIP
9	LEVER ADOPTER	CARBON STEEL (HOT DIP GALVANISED)
10	STOPPER PIN	AISI 316/AISI 304
11	STEM WASHERS	SPRING STEEL
12	NAME PLATE (FOR VALVE TAG NO.)	SS 316 (2 MM THICK)
13	PAINTING	NO PAINTING NEEDS TO BE DONE AS ALL PARTS OF THE VALVES ARE GALVANISED.

*[Handwritten Signature]*



QUALITY PLAN		CUSTOMER: RRVUNL BIDDER/VENDOR:		PROJECT: 2X660MW SURATGARH STPP QP NO: PE-QP-392-100-M006		SPEC. NO: PE-TS-392-100-M004 SPEC. TITLE				
SHEET 1 OF 2		SYSTEM: L.P. VALVES		ITEM: CARBON STEEL BALL VALVES SIZE 15 TO 50 NB / CLASS 800 & 65 TO 150NB / CLASS 150		SECTION VOLUME				
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
									P W V	
1.	MATERIAL									
1.1	BODY, END PIECES BALL, SPINDLE, GLAND, LEVER, FASTNERS	1. PHYSICAL, CHEMICAL PROPS. 2. HEAT TREATMENT 3. SURFACE DEFECTS	MA CR MA	PHYSICAL, CHEM, TESTING REVIEW OF H.T. RECORDS VISUAL	100% 100% 100%	-DO- MSS-SP-55	-DO- FREE FROM DEFECTS	T.C. H.T. INTERNAL INSPN. RECORDS INSPN. REPORT	3 2 2 2	1 1 1 1
1.2	BODY, END PIECES	1. SURFACE DEFECTS	CR	PENTRANT TEST	100%	ASTME 165	ANSI B 16.34	TEST REPORT	3/2	1
2.0	IN PROCESS INSPECTION									Applicable only for SS castings
2.1	MACHINING OF ALL COMPONENTS	1. DIMENSIONS 2. SURFACE FINISH	MA MA	MEASUREMENT VISUAL	100% 100%	MFG. DRG. MFG. DRG.	MFG. DRG. MFG. DRG.	LOG BOOK LOG BOOK	3/2 3/2	- -
3.0	BEFORE GALVANISING --SHELL TEST FOR PRESSURE PARTS.	3. SURFACE DEFECTS	CR	PENTRANT TEST	100%	ASTME 165	ANSI B 16.34	T.C.	3/2	1
3.1	BODY, END PIECES (PRESSURE PARTS)	LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	APPD. DRG.	NO LEAKAGE	T.C.	2	1
4.0	GALVANIZING OF CARBON STEEL BODY, END PIECES AND ALL OTHER CARBON STEEL VALVE PARTS	1. FREEDOM FROM SURFACE DEFECTS 2. UNIFORMITY IN THICKNESS 3. ADHESION	MA MA MA	VISUAL THICKNESS KNIFE TEST	100% VALVE BODY AT RANDOM -DQ-	IS:2629 IS:2629 IS:2629	IS:2629 IS:2629 IS:2629	INSPN REPORT INSPN REPORT INSPN REPORT	3/2 3/2 3/2	1 1 1
										THICKNESS 50 MIN. MICRONS TO BE CHECKED WITH ELCOMETER
BHEL		PARTICULARS		BIDDER/VENDOR						
LAKHAN		NAME								
		SIGNATURE								
		DATE								
				BIDDER'S/ VENDOR'S COMPANY SEAL						

		<b>QUALITY PLAN</b>		CUSTOMER: RRVUNL		PROJECT: 2X660MW SURATGARH STPP		SPEC. NO.: PE-TS-392-100-M004		
				BIDDER/VENDOR:		QP NO: PE-QP-392-100-M006		REV 00 DT. 08.05.2014		SPEC. TITLE
SHEET 2 OF 2		SYSTEM: L.P. VALVES		ITEM: CARBON STEEL BALL VALVES SIZE 15 TO 50 NB / CLASS 800 & 65 TO 150NB / CLASS 150		SECTION		VOLUME		
S.NO.	COMPONENT/ OPERATION	CHARACTERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY P W V	REMARKS


ASSEMBLY OF ALL VALVE AFTER GALVANISING										
5.0	BALL AND SEAT	1. LAPPING	CR	MATCHING	100%	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE UNIFORM WITH SOFT SEAT	LOG BOOK	3/2	-	2,1
6.0	FINAL TESTING ASSEMBLY	1. DIMENSIONS	MA	MEASUREMENT	100%	APPD. DRG.	INSRN. REPORT	3/2	2, 1	-
6.1		2. OPENING/CLOSING	MA	OPERATION	100%	SMOOTH OPERATION OF VALVE	-DO-	3/2	2, 1	-
6.2	TESTING									
6.2.1	BODY	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	APPD. DRG.	T.C.	3/2	2, 1	-
6.2.2	SEAT	1. LEAK TIGHTNESS	CR	-DO-	100%	-DO-	-DO-	3/2	2, 1	-
		2. LEAK TIGHTNESS	CR	PNEUMATIC TEST	100%	-DO-	-DO-	3/2	2, 1	-
5.0	PACKING, NAME PLATE, CLEANINESS	AS PER BHEL TECH. SPEC. AND FIXING OF SS NAME PLATE WITH VALVE TAG NOS. TO VALVE BODY	MA	VISUAL	100%	TECH. SPEC.	(Soft copy of photographs)	3/2	2	1

### 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

BHEL		BIDDER/VENDOR	
LAKHAN		NAME	
[Signature]		SIGNATURE	
9/07/14		DATE	
		BIDDER'S/ VENDOR'S COMPANY SEAL	

	<b>DATA SHEET - C</b> <b>BALL VALVES</b> <b>2X660MW SURATGARH STPP</b> <b>(STAGE-V, UNIT#7&amp;8)</b>	SPECIFICATION NO. PE-TS-392-100-M004	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 08.05.2014
		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 valves showing following information.
  - i) Complete cross sectional arrangement of the valve.
  - 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 Relevant catalogue/leaflet of the actuators
- 1.3 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)	12 Nos.	1 Nos.
3	O&M Manuals	12 Nos.	2 Nos.

