

	TITLE:		SPECIFICATION NO. PE-SS-999-100-Q001	
	<p style="text-align: center;">PREAMBLE</p>		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.

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


VOLUME – IIB

**TECHNICAL SPECIFICATION
FOR
GUN METAL VALVES**

SPECIFICATION NO. PE-TS-392-100-M003




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

	TECHNICAL SPECIFICATION GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)	SPECIFICATION NO. PE-TS-392-100-M003	
		VOLUME : IIB	
		SECTION:	
		REV. NO.: 00	DATE: 08.05.2014
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	TECHNICAL SPECIFICATION GUN METAL VALVES	SPECIFICATION NO. PE-TS-392-100-M003	
		VOLUME : IIB	
		SECTION: A	
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SECTION-A

SCOPE OF ENQUIRY

	TECHNICAL SPECIFICATION GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)		SPECIFICATION NO. PE-TS-392-100-M003	
			VOLUME : IIB	
			SECTION: A	
			REV. NO.: 00	DATE: 08.05.2014
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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 gun metal 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

- 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 gun metal valves shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of gun metal valves 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.

	TECHNICAL SPECIFICATION GUN METAL VALVES	SPECIFICATION NO. PE-TS-392-100-M003	
		VOLUME : IIB	
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SECTION-B


PROJECT INFORMATION

	TECHNICAL SPECIFICATION GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)	SPECIFICATION NO. PE-TS-392-100-M003	
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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.

	TECHNICAL SPECIFICATION GUN METAL VALVES	SPECIFICATION NO. PE-TS-392-100-M003	
		VOLUME : IIB	
		SECTION: C	
		REV. NO.: 00	DATE: 08.05.2014
		SHEET 1	OF 1

SECTION-C

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFIC TECHNICAL REQUIREMENTS GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)		SPECIFICATION NO. PE-TS-392-100-M003
			SECTION C
		REV. NO.: 00	DATE: 08.05.2014
		Sheet 1 of 2	

1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the standard technical specifications, 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.
- 2.2 Commissioning spares, if any.
- 2.3 Mandatory spares as applicable depending upon the project requirement
- 2.4 Set of special tools and tackles if required for the maintenance, erection etc. of the equipment supplied.
- 2.5 Various drawings, datasheets, operation and maintenance manuals etc., as specified in Data Sheet-C.

3. EXCLUSIONS:

Erection & Commissioning of equipment at site is excluded from the bidder's scope.

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.

	SPECIFIC TECHNICAL REQUIREMENTS GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)		SPECIFICATION NO. PE-TS-392-100-M003	
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	Sheet 2 of 2			

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 Valve Tag Nos. shall be incorporated in all the dispatch documents.
- 6.5 Proper care shall be taken to avoid damage to the painted surface during transit.
- 6.6 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 dispatch of valves will be given only after satisfactory packing conditions of valves from vendors work.
- 6.7 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

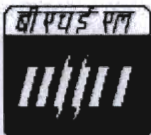
- a) **Mandatory Spares:** These shall be as per Data Sheet-A.
- b) ~~**Recommended Spares:** List of recommended spares for 3 year reliable operation along with the unit price shall be indicated in the schedule of prices for recommended spares enclosed in Volume III. Cost of Recommended spares shall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

	TECHNICAL SPECIFICATION GUN METAL VALVES	SPECIFICATION NO. PE-TS-392-100-M003	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 08.05.2014
		SHEET 1	OF 1

SECTION-D

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

	STANDARD TECHNICAL SPECIFICATION FOR GUN METAL VALVES		SPECIFICATION NO. PE-SS-999-100-M003	
			VOLUME . II B	
			SECTION D	
			REV. NO. 03	DATE. 02-06-2012
			SHEET 1 OF 3	

1 GENERAL

This specification covers the design, materials, construction features, manufacture and testing of Gun Metal Gate, Globe and Non Return Valves at Vendor's or/ and sub-Vendor's works inclusive of painting and packing requirements.

2 CODES AND STANDARDS

- 2.1 The design, material, 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 have sizes from 15mm NB to 50mm NB and shall be as per the latest editions of IS:778 /BS:5154 and shall be of class2 / PN 16 minimum.
- 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

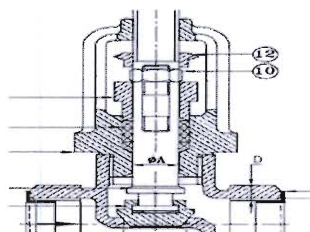
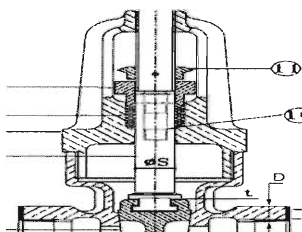
These valves shall be used for non-corrosive media like cooling water service, drain from compressed air piping etc. as specified in Data Sheet- A. All valves shall be suitable for service conditions i.e. flow, temperature and pressure under which they are required to operate and those performing similar duties shall be interchangeable with each other unless otherwise specified.

4 MATERIALS


- 4.1 The materials of construction of main parts of the Gate, Globe, and non-return 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 and to suit service conditions. These materials shall be subject to purchaser's approval.

5 CONSTRUCTION FEATURES

- 5.1 The valves covered under this specification shall have screwed ends and shall be provided with female parallel / taper threads. Bonnet shall be screwed in / union yoke type. Valve ends shall be screwed female/ male parallel threads as per IS 554/ ANSI B1.20.1 as specified in Data Sheet-A.
- 5.2 All gate and globe valves shall be provided with yoke type screwed- in bonnet and shall be of rising stem, outside screw as indicated in the sketches below. Joint of bonnet with body shall be metal to metal.




- 5.3 The type of non-return valves shall piston lift type designed suitably with disc lift smooth & fully guided. Piston lift non return valves shall also be provided with screwed- in cover. Joint of cover with body shall be metal to metal.
- 5.4 The valves covered under this specification shall have seats as an integral part of the body.

	STANDARD TECHNICAL SPECIFICATION FOR GUN METAL VALVES		SPECIFICATION NO. PE-SS-999-100-M003	
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- 5.5 All globe and Non-return valves shall have an arrow indicating the direction of flow cast or embossed on the valve body. The direction of flow for globe valves shall be from under to over the disc.
- 5.6 Discs of globe valves which are detachable or two piece construction shall be of such design that they do not become detached from the spindle while in service. Discs of globe & lift check valves shall be guided to ensure correct alignment.
- 5.7 All Globe valves shall preferably be provided with radiused/ spherical/ angular faced disc seatings. The disc shall be secured with stem with disc nut or with such an arrangement that the disc shall be free to revolve. Disc of compressed air system globe valves shall be provided with renewable synthetic rubber seating ring of hardness 60 ° +5 /-0 Shore A.
- 5.8 All gate and globe valves shall be offered with back seating arrangement for replacement of gland packing when the valves are full opened and while working under full working pressure. Back seats shall be provided on both bonnet and stem.
- 5.9 Gate and globe valves shall be supplied with mechanical position indicator for OPEN and SHUT position.
- 5.10 All gate and globe valves shall be closed by rotating the handwheel in the clockwise direction when looking at the face of the handwheel. The face of each handwheel shall be clearly marked "Open" and "Shut" with arrows indicating the direction of rotation to which they refer.
- 5.11 Each valve hand wheel shall be fitted with a circular nameplate of an approved material indicating the valve Tag No., duty or service condition intended and the function of the valve. For valves of smaller size, a permanent steel tag may be fixed on the valve body indicating the purchaser's valve Tag Number and service. The above are in addition to rating plates and labels being provided by the manufacturer.

6 SPECIAL FEATURES OF VALVES.

- 6.1 Extension spindle/ chain operation to the valves shall be provided wherever required as specified in Data Sheet A.
- 6.2 Where required as specified in Data sheet A, valve yoke/spindles shall be lengthened so that the hand wheel is at a height of approximately one meter above the level of the floor or platform from which the valve is to be operated.
- 6.3 For valves that are to be kept locked in full "Open" or "Close" position, if specified in Data Sheet A, the locking arrangement shall be provided with a non-detachable locking arrangement.
- 6.4 Valves with limit switches (as mentioned in Data sheet- A) shall be required only for indication or for interlocking with some equipment. Valves with such provision shall be offered with required number of limit switches for open/close position of the valve. The limit switches for this application shall have one normally open and one normally closed contact. The limit switches shall be cutler hammer/Siemens/Honeywell make and limit switch housing shall be weather proof. The limit switches shall also be wired to a terminal box.

	<p align="center">STANDARD TECHNICAL SPECIFICATION FOR GUN METAL VALVES</p>	SPECIFICATION NO. PE-SS-999-100-M003	
		VOLUME . II B	
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		REV. NO. 03	DATE. 02-06-2012
		SHEET 3	OF 3

7 MANUFACTURE OF VALVES

- 7.1 Valve castings shall be procured from foundries observing strict quality control and approved by reputed customers.
- 7.2 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.

8 TESTING AND INSPECTION

- 8.1 All valves shall be tested and inspected as per the approved quality plan. The minimum requirements are as indicated in attached quality plan. However, in case of order on the vendor, the QP shall be finalized by vendor with customer without any financial implications to meet customer project technical requirements.

8.2 Hydrostatic/Air Tests:

Valves shall be hydraulically tested for shell tightness & seat tightness in accordance with IS 778 and BS 5154 & BS EN 12266-1 (Part-1) (as applicable) before painting of valves.

- 8.3 Gate and Globe valves seats shall also be tested on air at a pressure of 7kg/cm².
- 8.4 No leakage shall be allowed for any size of the valve covered under this specification. Seats of check valves shall also be tested to one-fourth of the maximum cold working pressure.
- 8.5 Blue matching of seats shall be carried out and records shall be maintained for verification by the Purchaser.
- 8.6 Dimensional and functional checks shall be carried out.

9 PAINTING

Valve bodies and other items shall be thoroughly cleaned after final testing. Hand wheel of the valves shall be painted with enamel paint by spray painting. The enamel paint used shall be of reputed companies.

10 CLEANING AND PROTECTION FOR DESPATCH:

- 10.1 Valve ends shall be protected from external damage and sealed against the ingress of dirt.
- 10.2 Valve ends shall be protected by means of screwed polythene caps/rubber end protectors properly secured to valve ends to avoid any damage to threads at the ends.
- 10.3 All the valves shall be packed suitably in wooden cases in order to avoid damage during transit and also during storage at site.
- 11 Valve Tag nos. shall also be incorporated in all the dispatch documents.

DATA SHEET- A GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)																	SPECIFICATION NO. PE-TS-392-100-M003 VOL II B SECTION D REV. NO.: 00 DATE: 08/05/2014 SHEET 1 OF 2				
1	2	3	4	5	6		7	8	9	10	11	12	13		14	15	16				
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 COMMISSIONING SPARES (Nos.)	COMMISSIONING SPARES	MANDATORY SPARES AS PER CLAUSE G-6 OF SCHEDULE-F8 (LIST & QUANTITY OF MANDATORY SPARES)				
					PRESSURE KG/CM2(g)	TEMP (deg C)							(MM)	(MM)			GLAND PACKING (1 SET FOR EACH VALVE) (SETS)	VALVE STEMS (2 PER SET OF 15 VALVES) (Nos.)	DISC (1 PER SET OF 10 VALVES) (Nos.)		
1	SW-26, SW-31, SW-38, SW-54, SW-63, SW-65, SW-67, SW-70, SW-72, SW-74, SW-76, SW-78, SW-80, SW-82, SW-84, SW-86, SW-88, SW-90, SW-92, SW-94, SW-96, SW-98, SW-100, SW-102, SW-104, SW-106, SW-108, SW-110, SW-112, SW-114, SW-119, SW-120 TO 199, SW-240 TO 259 (each 1 no)	HV (GLV)	25	MAN	10	60	SW SYSTEM	PN16 AS PER BS 5154	GM AS PER IS 318 Gr. 2	GM AS PER IS 318 Gr. 2	SCREWED AS PER IS 554 PARALLEL	-	34.2	4	131	14	131	18	14		
2	VALVES FOR AUTO DRAIN TRAPS	GLV	25	MAN	10	60	SA & SYSTEM	PN16 AS PER BS 5154	GM AS PER IS 318 Gr. 2	GM AS PER IS 318 Gr. 2	SCREWED AS PER IS 554 PARALLEL	COPPER ALLOY WITH NITRILE DISC	34.2	4	100	10	100	14	10		
													TOTAL		231	24	231	32	24		

NOTES:

1. LEGENDS: MAN=MANUAL, GLV=GLOBE VALVES, HV=HOSE VALVES

2. COMMISSIONING SPARES:

SETS OF GLAND PACKING: 10% OF MAIN VALVE QUANTITY 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 Datasheet-A (Data sheet for material of construction) for Gun Metal Valves.

Handwritten signature and date 08/05/2014

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

	DATA SHEET-A GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)		SPECIFICATION NO. PE-TS-392-100-M003	
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MATERIAL OF CONSTRUCTION
(GUN METAL VALVES)

PART NO.	PART NAME	MATERIAL	MATERIAL SPECIFICATION/ STD`
1	BODY	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
2	BONNET/ COVER (PLNRV)	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
3	WEDGE / DISC (GLOBE/ PLNRV)	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
4	DISC CHECK NUT	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
5	GLAND	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
6	NITRILE RUBBER DISC/ DISC 'O' RING (valves for air service)	NITRILE RUBBER	HARDNESS 60 ° +5 /-0 SHORE 'A'
7	STEM	EXTRUDED BRASS	IS :320 GR HT2/ DIN DN 12165:98 CW 721R
8	GLAND PACKING	NON ASBESTOS / TEFLON PACKINGS	
9	END CAP (hose valve)	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
10	CAP GASKET (hose valve)	CAF	IS 2712:79
11	END CHAIN (hose valve)	SS	AISI 316
12	INDICATOR	GM	Gun metal as per IS:318 Gr. LTB2/ ASTM B62
13	GLAND STUDS & NUTS	CARBON STEEL	ASTM A193 Gr.B7/ A194 Gr.2H
14	HAND WHEEL	MALLEABLE CAST IRON	ASTM A47 Gr 32510
15	WASHER (for hand wheel screw)	CARBON STEEL	GALVANIZED/ AISI 316
16	SCREW (for hand wheel)	CARBON STEEL	GALVANIZED/ AISI 316
17	NAME PLATE	SS (2MM THICK)	AISI 316 FIXED TO VALVE OR FIRMLY TIED TO HAND WHEEL WITH SS WIRE

QUALITY PLAN				CUSTOMER: RRVUNL		PROJECT: 2X660MW SURATGARH STPP		SPEC. NO: PE-TS-392-100-M003					
				BIDDER/ VENDOR: LATER		QP NUMBER: PE-QP-392-100-M 051 REV: 00 DTD. 08/05/2014		SPEC.TITLE: COPPER ALLOY GATE , GLOBE & NON RETURN VALVES					
SHEET 1 OF 5				SYSTEM: - WATER (ACW/CW/DMCW/PW/SW/ ECW) - AIR (INSTRUMENT & SERVICE AIR)		ITEM: COPPER ALLOY GATE / GLOBE/ HOSE/NON RETURN VALVES SIZE 15 TO 50 MM NB/ CLASS PN16		SECTION VOLUME					
SL NO (1)	COMPONENT /OPERATION (2)	CHARACT-ERISTICS CHECKED (3)	MA	PHYS & CHEM TEST	ONE/ HEAT	APPD DRG/ TECH SPEC	APPD DRG/ TECH SPEC	TEST CERT	3/2	2	1	AGENCY P W V (10)	REMARKS (11)
GATE/ GLOBE VALVES													
1.0 MATERIALS													
1.1	BODY, BONNET, WEDGE/ DISC, DISC CHECK NUT, GLAND, INDICATER,	1. PHYS & CHEM. PROPERTIES 2. SURFACE DEFECTS 3. DIMENSIONS	MA	PHYS & CHEM TEST	ONE/ HEAT	APPD DRG/ TECH SPEC	APPD DRG/ TECH SPEC	TEST CERT	3/2	2	1		BODY WILL CARRY HEAT MARKS FOR CO-RELATION WITH TEST CERTIFICATES
1.2	'O' RING (SYNTHETIC RUBBER) FOR AIR SERVICE VALVES	1. SURFACE DEFECTS 2. DIMENSIONS 3. HARDNESS	MA	VISUAL MEASUREMENT	100%	FREE FROM DEFECTS PRODUCTION DRG	FREE FROM DEFECTS PRODUCTION DRG	INSPN. REPORT --DO--	2	2	-		
1.3	HANDWHEEL	1.MECH PROPERTIES 2.HARDNESS 3.DIMENSIONS 4.SURFACE DEFECTS	MA	MECH TEST HARDNESS TEST MEASUREMENT VISUAL	100%	APPD DRG/ TECH SPEC APPD DRG/TECH SPEC./RELV STD. APPD DRG FREE FROM DEFECTS	APPD DRG/ TECH SPEC APPD DRG/TECH SPEC./RELV STD. APPD DRG FREE FROM DEFECTS	TEST CERT. INSPN. REPORT --DO-- --DO--	3/2	2	1		
1.4	STEM	1. PHYS & CHEM. PROPERTIES 2. SURFACE DEFECTS 3. DIMENSIONS	MA	PHYS & CHEM TEST VISUAL MEASUREMENT	100%	APPD DRG/ TECH SPEC FREE FROM DEFECTS PRODUCTION DRG	APPD DRG/ TECH SPEC FREE FROM DEFECTS PRODUCTION DRG	TEST CERT INSPN. REPORT --DO--	3/2	2	1		
BHEL													
ARVIND BHARDWAJ				BIDDER/VENDOR									
SIGNATURE				SIGNATURE									
DATE				DATE									
				BIDDER'S/VENDOR'S COMPANY SEAL									

QUALITY PLAN				CUSTOMER: RRVUNL		PROJECT: 2X660MW SURATGARH STPP		SPEC. NO: PE-TS-392-100-M003	
SHEET 2 OF 5				BIDDER/ VENDOR: LATER		QP NUMBER: PE-QP-392-100-M 051 REV: 00 DTD. 08/05/2014		SPEC.TITLE: COPPER ALLOY GATE , GLOBE & NON RETURN VALVES	
SL NO	COMPONENT / OPERATION	CHARACT- ERISTICS CHECKED	SYSTEM:	CATE- GORY	TYPE/METHOD OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(11)
GATE/ GLOBE VALVES ITEM: COPPER ALLOY GATE / GLOBE/ HOSE/NON RETURN VALVES SIZE 15 TO 50 MM NB/ CLASS PN16 VOLUME									
1.5	STUD & NUT	1. PHYS & CHEM. PROPERTIES 2. SURFACE DEFECTS	MA	PHYS & CHEM TEST	ONE/ HEAT	APPD DRG/ TECH SPEC.	APPD DRG/ TECH SPEC	TEST CERT	1
2.0	ELECTRIC ACTUATORS	INSPECTION & TESTING SHALL BE CARRIED OUT AS PER ELECTRIC ACTUATOR MANUFACTURER'S RQP APPROVED BY NTPC/CUSTOMER AS APPLICABLE.	MA	VISUAL	100%	FREE FROM DEFECTS	FREE FROM DEFECTS	INSPN. REPORT	2
OR FOLLOWING INSPECTIONS & TESTS (1 TO 8)									
2.1	ELECTRIC ACTUATORS	1. TORQUE TESTING & SETTING OF TORQUE SWITCH 2. TRAVEL/STROKE 3. TRAVEL TIME 4. OPERATION OF LIMIT SWITCH 5. MANUAL OPERATION THROUGH HAND WHEEL 6. OPERATION TEST WITH POWER SUPPLY VARIATION 7. IR, HV, IR 8. DEGREE OF PROTECTION DESIGN VERIFICATION	MA	MECH., ELEC. TESTS	100%	TECH. SPEC./ APPD. DRG./ DATA SHEET/ IS:9334	APPD. DRG./ DATA SHEET/ IS:9334	INSPN. REPORT	3
			MA	WATER, DUST TEST	1/ TYPE	TECH. SPEC./ APPD. DRG./ DATA SHEET/ IS:9334	APPD. DRG./ DATA SHEET/ IS:9334	3RD PARTY TEST	2,1
			MA	TYPE TEST	ONE OF EACH SIZE & MODEL	TECH. SPEC./ APPD. DRG./ DATA SHEET/ IS:9334	AWWA C540	TEST INSPN REPORT	1
BHEL ARVIND BHARDWAJ 08/05/2014									
BIDDER'S/VENDOR'S COMPANY SEAL									

QUALITY PLAN			CUSTOMER: RRVUNL BIDDER/ VENDOR: LATER		PROJECT: 2X660MW SURATGARH STPP QP NUMBER: PE-QP-392-100-M 051 REV: 00 DTD. 08/05/2014		SPEC. NO: PE-JS-392-100-M003 SPEC.TITLE: COPPER ALLOY GATE , GLOBE & NON RETURN VALVES						
SHEET 3 OF 5			SYSTEM: - WATER (ACW/CW/DMCW/PW/SW/ ECW) - AIR (INSTRUMENT & SERVICE AIR)		ITEM: COPPER ALLOY GATE / GLOBE/ HOSE/NON RETURN VALVES SIZE 15 TO 50 MM NB/ CLASS PN16		SECTION VOLUME						
SL NO (1)	COMPONENT /OPERATION (2)	CHARACT- ERISTICS CHECKED (3)	CATE- GORY (4)	TYPE/METHOD OF CHECK (5)	EXTENT OF CHECK (6)	REFERENCE DOCUMENT (7)	ACCEPTANCE NORMS (8)	FORMAT OF RECORD (9)	AGENCY P W V (10)	REMARKS (11)			
GATE/ GLOBE VALVES													
3.0	MACHINING												
3.1	BODY, BONNET, WEDGE/ DISC, GLAND, CHECK NUT, INDICATOR	1. DIMENSIONS	MA	MEASURE MENT	100%	PROD. DRG	PROD. DRG	LOG BOOK	2	2	-		
		2. THREADED ENDS	MA	THREAD GAUGE	100%	--DO--	--DO--	--DO--	2	2	-		
		3. DISC/ BODY SEAT RING	CR	BLUE MATCHING	100%	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE 100% CONTACT WITH SEATING SURFACES					2	2	1
3.2	STEM	1. SURFACE DEFECTS	MA	VISUAL	100%	FREE FROM DEFECTS	LOG BOOK	LOG BOOK	2	2	1		
		2. DIMENSIONS	MA	MEASUREMENT	100%	PRODUCTION DRAWING	LOG BOOK	LOG BOOK	2	2	1		
3.3	BODY, BONNET STEM, DISC/ WEDGE	SURFACE DEFECTS	CR	PT	100%	ASTME165	ASME B 16.34 APPENDIX-III	INSPN REPORT	3/2	2	1		
4.0	ASSEMBLY TESTING												
4.1	BODY	LEAK TIGHTNESS	CR	HYDRAULIC	100%	APPD. DRG/ TECH.SPEC/ DESIGN STD	NO LEAKAGE	INSPN REPORT	2	2,1	--		
4.2	SEAT & BACK SEAT (IF APPLICABLE)	LEAK TIGHTNESS	CR	--DO --	100%	--DO--	-DO-	-DO-	2	2,1	-		
4.3	SEAT	LEAK TIGHTNESS	CR	PNEUMATIC	100%	APPD.DRG/ DESIGN STD	NO LEAKAGE	INSPN REPORT	2	2,1	-		
BHEL			PARTICULARS		BIDDER/VENDOR								
ARVIND BHARDWAJ			NAME										
Arv			SIGNATURE										
08/05/2014			DATE		BIDDER'S/VENDOR'S COMPANY SEAL								

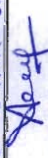
		QUALITY PLAN		CUSTOMER: RRVUNL		PROJECT: 2X660MW SURATGARH STPP		SPEC. NO: PE-TS-392-100-M003	
				BIDDER/ VENDOR: LATER		QP NUMBER: PE-QP-392-100-M 051 REV: 00 DTD. 08/05/2014		SPEC. TITLE: COPPER ALLOY GATE , GLOBE & NON RETURN VALVES	
SHEET 4 OF 5		SYSTEM: - WATER (ACW/CW/DMCWP/W/SW/ ECW) - AIR (INSTRUMENT & SERVICE AIR)		ITEM: COPPER ALLOY GATE / GLOBE/ HOSE/NON RETURN VALVES SIZE 15 TO 50 MM NB/ CLASS PN16		SECTION		VOLUME	
SL NO	COMPONENT / OPERATION	CHARACT- ERISTICS CHECKED	CATE- GORY	TYPE/METHOD OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	P W V	(11)


GATE/ GLOBE VALVES

3.5		OPERATIONAL TESTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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- ONLY FOR HANDWHEEL
 * CONFIRMATION
 CERTIFICATE FROM
 VENDOR
 PHOTOGRAPHS OF
 VALVES AFTER PACKING
 TO BE VERIFIED BY BHEL
 BEFORE ISSUING MDCC.


CONTINUE PAGE 5 OF 5 FOR QP FOR NON RERTURN VALVE

BHEL		BIDDER/VENDOR	
ARVIND BHARDWAJ	NAME		
	SIGNATURE		
08/05/2014	DATE		
		BIDDER'S/VENDOR'S COMPANY SEAL	

		QUALITY PLAN SHEET 5 OF 5		CUSTOMER: RRVUNL		PROJECT: 2X660MW SURATGARH STPP		SPEC. NO: PE-TS-392-100-M003				
				BIDDER/ VENDOR: LATER		QP NUMBER: PE-QP-392-100-M051 REV: 00 DTD: 28/06/2013		SPEC.TITLE: COPPER ALLOY GATE , GLOBE & NON RETURN VALVES				
SL NO (1)		COMPONENT /OPERATION (2)		CHARACT-ERISTICS CHECKED (3)		SYSTEM: -WATER (ACW/CW/DMCW/PW/SW/ ECW) - AIR (INSTRUMENT & SERVICE AIR)		ITEM: COPPER ALLOY GATE / GLOBE/ HOSE/NON RETURN VALVES SIZE 15 TO 50 MM NB/ CLASS PN16		SECTION VOLUME		
						CATE-GORY (4)	TYPE/METHOD OF CHECK (5)	EXTENT OF CHECK (6)	REFERENCE DOCUMENT (7)	ACCEPTANCE NORMS (8)	FORMAT OF RECORD (9)	TEST CERT INSPN. REPORT --DO--

NON RETURN VALVES												
1.0	MATERIALS	1. PHYS & CHEM. PROPERTIES	MA	PHYS & CHEM TEST VISUAL	100%	APPD DRG/ TECH SPEC FREE FROM DEFECTS	APPD DRG/ TECH SPEC FREE FROM DEFECTS	LOG BOOK	2	2	1	BODY WILL CARRY HEAT MARKS FOR CO-RELATION WITH TEST CERTIFICATES
1.1	1. BODY, COVER, DISC.	2. SURFACE DEFECTS	MA	MEASUREMENT	100%	PROD. DRG --DO--	PROD. DRG --DO--	INSPN REPORT	2	2	1	
2.0	MACHINING	3. DIMENSIONS	MA	MEASUREMENT	100%	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE 100% CONTACT WITH SEATING SURFACES	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE 100% CONTACT WITH SEATING SURFACES	INSPN REPORT	2	2	1	
2.1	2. BODY, COVER DISC	1. DIMENSIONS	MA	MEASUREMENT	100%	ASTM A165	ASTM A165	INSPN REPORT	3/2	2	1	
2.2	2. BODY, COVER DISC	2. THREADED ENDS	MA	MEASUREMENT	100%	NO LEAKAGE	NO LEAKAGE	INSPN REPORT	2	2	1	
2.3	3. BODY, COVER, DISC	3. DISC/ BODY SEATING CONTACT	CR	PT	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
3.0	ASSEMBLY TESTING	LEAK TIGHTNESS	CR	HYDRAULIC	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
3.1	1. BODY	LEAK TIGHTNESS	CR	--DO--	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
3.2	2. SEAT	LEAK TIGHTNESS	CR	--DO--	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
3.3	3. SEAT	LEAK TIGHTNESS	CR	PNEUMATIC	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
4.0	COMPLETE VALVE ASSEMBLY INSPECTION	OVERALL, DIMENSIONS	MA	VISUAL	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
5.0	1. CLEANING & DEBURRING	PERFORMANCE	CR	OPERATION OF DISC	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
6.0	2. SURFACE PREPARATION & UNIFORMITY AS PER BHEL TECH SPECIFICATION	FIXING OF NAMEPLATE FOR VALVE TAG NOS.	MA	VISUAL	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	
7.0	PAINTING (IF REQUIRED) PACKING IN WOODEN CASES AND MARKING		MA	VISUAL	100%	APPROVED DRG/ TECH SPEC	APPROVED DRG/ TECH SPEC	INSPN REPORT	2	2	1	

BHEL		BIDDER/VENDOR	
ARVIND BHARDWAJ		NAME	
[Signature]		SIGNATURE	
08/05/2014		DATE	
		BIDDER'S/VENDOR'S COMPANY SEAL	

	DATA SHEET - C GUN METAL VALVES 2X660MW SURATGARH STPP (STAGE-V, UNIT#7&8)	SPECIFICATION NO. PE-TS-392-100-M003	
		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 contract.

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.