

2X600MW ADILABAD SCCL TPP


VOLUME – IIB

TECHNICAL SPECIFICATION FOR CAST IRON GATE, GLOBE & NON RETURN VALVES

SPECIFICATION NO. PE-TS-381-100-M002



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

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

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

1.1 Volume-I (CONDITIONS OF CONTRACT)

This consists of four parts as below:-

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

1.2 Volume-II TECHNICAL SPECIFICATIONS

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

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

1.2.1 Volume-IIB

This volume is sub-divided into following sections:-

- Section-A : This section outlines the scope of enquiry.
- Section-B : This section provides "Project Information".
- Section-C : This section indicates technical requirements specific to the contract, not covered in Section-D.
- Section-D : This section comprises of technical specifications of equipments complete with data sheet A, B and C.

Data Sheet - A Specifies data and other requirements pertaining to the Equipment.


Data Sheet - B Specifies data to be filled by the bidder (Data Sheet-B is contained in Volume-III).

Data Sheet -C Indicates data/documents to be furnished after the award of contract as per agreed schedule by the vendor (as applicable).

1.2.2 Volume-III (TECHNICAL SCHEDULES)


This volume contains technical schedules and Data Sheets-B, which are to be duly filled by the bidder and the same shall be furnished with the technical bid.

- 2.0 The requirements mentioned in Section-C / Data Sheets-A of section-D shall prevail and govern in case of conflict between the same and the corresponding requirements mentioned in the descriptive portion in Section-D

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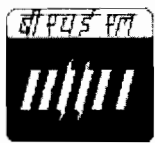
SECTION	TITLE
A	SCOPE OF ENQUIRY
B	PROJECT INFORMATION
C	SPECIFIC TECHNICAL REQUIREMENTS
D	STANDARD TECHNICAL SPECIFICATIONS
D1	VALVES
	<ul style="list-style-type: none"> ▪ STANDARD TECHNICAL SPECIFICATION FOR CI GATE/ GLOBE/NON RETURN VALVES ▪ DATA SHEET – A1 ▪ QUALITY PLAN
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**TECHNICAL SPECIFICATION
CAST IRON GATE, GLOBE & NON
RETURN VALVES
2x600MW ADILABAD SCCL TPP**

SECTION-A

SCOPE OF ENQUIRY

	TECHNICAL SPECIFICATION CAST IRON GATE, GLOBE & NON RETURN VALVES 2X600MW ADILABAD SCCL TPP		SPECIFICATION NO. PE-TS-381-100-M002	
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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 CI Gate, Globe and Non Return valves complete with all accessories as per the requirements mentioned in different sections of the specification for 2X600MW Adilabad SCCL TPP.


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 CI Gate/ globe/non return valves shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of CI Gate/ globe/non return 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.

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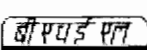
PROJECT INFORMATION

	TECHNICAL SPECIFICATION CAST IRON GATE, GLOBE & NON RETURN VALVES 2X600MW ADILABAD SCCL TPP	SPECIFICATION NO. PE-TS-381-100-M002	
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PROJECT INFORMATION

The proposed 2 x 600 MW Adilabad Thermal Power Project would be set up by SINGARENI COLLIERIES COMPANY LTD. (a Government of INDIA Undertaking), near Pegadapalli village, Jaipur Mandal, District-Adilabad of Andhra Pradesh. 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 given here in under is for general guidance and shall not be contractually bidding on BHEL/OWNER. All relevant site data/information as may be necessary shall have to be obtained/collected by the bidder.

Sl. No.	FEATURES	DETAILS
1	Owner	SINGARENI COLLIERIES COMPANY LTD.
	Consultant	NTPC
2	Site Location	Located near Pegadapalli village, Jaipur Mandal, District-Adilabad of Andhra Pradesh. The site is 14.6Km from nearest town Mancherial and 4.6 Km from State Highway.
3	Nearest Airport	Shamshabad Airport, Hyderabad (250 Km)
4	Nearest Railway Station	Mancherial railway station on Nagpur-Kazipet Main rail line of South Central Railway, located at a distance of about 14.6 kms.

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SECTION-C

SPECIFIC TECHNICAL REQUIREMENTS



**SPECIFIC TECHNICAL REQUIREMENTS
CAST IRON GATE, GLOBE AND NON
RETURN VALVES
2X600MW ADILABAD SCCL TPP**

SPECIFICATION NO. PE-TS-381-100-M002

SECTION C

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1. GENERAL

1.1 The valves shall meet the technical requirements and conform to the standard technical specifications, Data sheet A-1 & Data sheet-A2 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 sheets A-1 & A2 are different, the requirements of Data sheet A-1 & A2 shall prevail. Similarly in the event of contradictions between Section –C & Section –D/ Data sheet A-1 & A2, 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 sheets A-1 and A-2 of Vol. II B Section D.

2. SCOPE OF SUPPLY

2.1 The valves complete with all accessories shall be supplied as per Data sheets A-1 & Data sheet-A2 of Section D. For detail refer the same. Each valve (quantity and other details specified in Data Sheet-A-1) shall be complete with the following accessories.

- i) Lifting arrangement provision for handling i.e., lifting lugs, eye bolts etc.
- ii) Actuators and limit switches as required to make valve complete in all respects. — *N.A.*

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 Finish paints for touch-up painting of equipment after erection at site in sealed containers.

2.6 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.

	SPECIFIC TECHNICAL REQUIREMENTS CAST IRON GATE, GLOBE AND NON RETURN VALVES 2X600MW ADILABAD SCCL TPP		SPECIFICATION NO. PE-TS-381-100-M002
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5 PAINTING REQUIREMENT:

a) Non-Coastal locations:

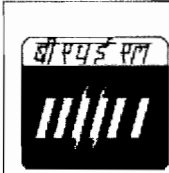
Valve shall be painted externally after the necessary testing has been carried out. Just before the painting, valve bodies and other items shall be thoroughly cleaned with wire brush/hand tool (Sa1/St2/St3 as applicable). The valves shall be first painted with two coats of primer zinc Chromate to IS 2074 (alkyd medium) each coat of DFT minimum of 25 to 35 microns. Finish paint shall be of three(3) coats of synthetic enamel (alkyd medium) as per IS 2932 & each coat DFT of minimum 20-35 microns & the total DFT of primer & finish paint shall be 150 microns minimum. Colour shade of finished/final paint shall be shade no. 217 of IS 5 or Grey as per RAL 9002.

6 PACKING INSTRUCTIONS:

- a) 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.
- b) The valve shall be dispatched in total assembled form.
- c) Discs of all valves shall be properly secured while dispatching so that there is no risk of damage to the disc & seat.
- d) Body ends shall be suitably sealed to protect them against damage during transit and storage.
- e) 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.
- f) Valve Tag Nos. shall be incorporated in all the dispatch documents.
- g) Proper care shall be taken to avoid damage to the painted surface during transit.
- h) 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-A1.
- 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.



**SPECIFIC TECHNICAL REQUIREMENTS
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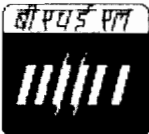
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8 DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

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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**TECHNICAL SPECIFICATION
CAST IRON GATE, GLOBE & NON
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SECTION-D

STANDARD TECHNICAL SPECIFICATIONS

D1: FOR VALVES

DATA SHEET – C

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1.0 GENERAL

This specification covers the design, materials, construction features, manufacture and testing of cast iron valves comprising cast Iron gate, globe and swing check type non-return valves at Vendor's or/ and sub-Vendor's works inclusive of painting and packing requirements.

2.0 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 as per the following standards:

- | | | |
|-------|-----------|---|
| 2.2.1 | BSEN:1171 | Cast iron gate valves of sizes 50 mm to 1000 mm NB |
| 2.2.2 | BSEN13789 | Cast iron globe valves of sizes 50 mm to 400 mm NB |
| 2.2.3 | BSEN12334 | Cast iron check valves of sizes 50 mm to 1000 mm NB |

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 purchaser shall be final and binding

3.0 DESIGN REQUIREMENTS

3.1.1 All valves shall be suitable for the 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.

3.2 Materials

3.2.1 The materials of construction of main parts of the Gate, Globe, and non-return valves shall be as specified in Data Sheet-A1.

3.2.2 The materials of construction of the remaining parts shall be as per the relevant standard governing the valves and to suit water quality. These materials shall be subjected to approval.

3.2.3 Material used in manufacture of valves shall be of tested quality.

3.2.4 For CI gate, globe & check valves wherever thickness of body/ bonnet is not mentioned in valve standard, the thickness mentioned in ASME B16.1 Cl.125 shall be applicable.

4.0 CONSTRUCTION FEATURES


4.1 End Connections:

All the valves covered under this specification shall have flange drilling as per ANSI B16.1 or BS EN 1092-2 (replaces BS 4504) and the flanges shall be plain faced only.


4.2 All gate and globe valves shall be of rising stem, out side screw and yoke type. Protective cover shall be provided to the spindle to protect it from foreign materials.

4.3 Gland & gland flange shall be provided in two pieces for uniform tightening of glands. Gland flange shall carbon steel (A105).

4.4 For gate valves yoke for 100 NB & below size valves shall be of integral with bonnet. For sizes larger than 100 NB yoke shall consist of two halves which shall be bolted together at the top & also to the bonnet.

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- 4.5 All Gate valves shall be of the full-way type and when in full open position, the bore of the valve shall not be obstructed by any part of the gate.
- 4.6 Globe valves shall preferably have conical or spherical disc and the disc shall be free to revolve on the spindle.
- 4.7 Non return valves and globe valves shall have an arrow cast on the valve body to indicate the direction of flow.
- 4.8 All gate and globe valves shall be provided with back seating arrangement and position indicator. The back seating shall be of replaceable type.
- 4.9 Separate seat rings provided in the body and wedge/disc shall be of replaceable type.
- 4.10 Lugs with bolts shall be provided wherever necessary to facilitate handling heavy valves or part of valves.
- 4.11 Valves of size 350mm NB and above, intended for manual operation shall be equipped with a gear operator. This is to enable easy operation and to ensure tight closure. Gear operator shall be selected for the maximum differential pressure across the valve such that effort required to operate does not exceed 25 kgf. All gears used shall be machine cut and shall be forged steel to IS2004 Grade 4/ EN8. The gears shall be enclosed with a cover.
- 4.12 Large bore valves 350mm NB and above shall be provided with ball/ thrust bearings to take care of the axial load on the spindle.
- 4.13 All the gate and globe valves shall be closed by rotating the handwheel in the clockwise direction when looking at the face of the handwheel. In case where the handwheel is not directly attached to the valve spindle, suitable gearing shall be introduced to reconcile the above condition. The face of each handwheel shall be clearly marked "Open" and "Shut" with arrows indicating the direction of rotation to which they refer. Alternatively these markings may be shown on a plate secured below the hand wheel nut.
- 4.14 Circular/ rectangular name plate of 2mm thick stainless steel as specified shall be fitted suitably/ riveted on to valve bonnet flange/ yoke. Name plate shall have valve tag no. and service description engraved filled with black enamel paint.
- 5.0 SPECIAL FEATURES OF VALVES
- 5.1 Locking Arrangement
Valves that are to be kept locked in full "Open" or "Close" position if specified in Datasheet-A1 shall be provided with a non-detachable locking arrangement.
- 5.2 Valves with limit Switch
Valves with limit switches as mentioned in Data sheet-A1 shall be required for indication or for interlocking with some equipment. Valves for such provision shall be offered with specified 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. Limit switch housing shall be weather proof. The limit switches shall be of reputed make.
- 5.3 Wherever required as specified in Data sheet-A1, valve spindles shall be lengthened so that the handwheel is at a height of approximately 1 metre above the level of the floor or platform from which the valve is to be operated. Also if called for in Data Sheet-A1 chain & sprocket arrangement shall be provided.

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5.4 Motorised Valves

5.4.1 The motorised valves shall be offered with the electric actuators of reputed make. A particular make and type of actuator shall be designed for the maximum differential working pressure. However, the stall torque of the selected actuators shall be minimum 1.5 times the valve unseating torque requirement at the maximum differential working pressure (design pressure) and required operating time as mentioned in in Datasheet A-1/Datasheet A-2.

5.4.2 Electric actuators shall be mounted directly on the valves

5.4.3 In case integral bypass is provided to the main valve which is motorised, the integral bypass valve shall also be motorised. Actuator shall be provided with hand wheel also for manual operation.

5.4.4 The motors, gearing and disengaging handwheel shall be adequate to open and close the valve under maximum differential pressure and shall be completely assembled on the respective valve and shop tested before shipment.

6.0 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.

7.0 LUBRICATION:

7.1 Provision shall be made for suitable lubrication wherever necessary to ensure smooth operation and freedom from undue wear.

7.2 Where oil filled gear boxes are used, they shall be provided with filling and drain plugs, oil level gauges or dip sticks. Housing for ball and roller bearings shall be packed with grease at the time of assembly.

7.3 Choice of oil and grease shall be based on ambient temperature 60^o C including that for actuator.

8.0 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 the purchaser without any financial implications to meet project technical requirements.


8.2 Hydrostatic/Air Tests:

All valves shall be hydraulically tested before painting of the valves as below:

8.2.1 Gate, Globe and Non return valves shall be hydraulically tested at pressures mentioned in BS EN: 12266 Part-I and governing standards. The seat test will be 1.1 times of the rated pressure & shell test will be 1.5 times of the rated pressure. Duration of test shall be as per BS EN 12266.

8.2.2 All the Motor operated valves shall be tested for seat/backseat with the motor actuator for the maximum differential working pressure (design pressure) & open/close time as specified in Data sheet-A1.

8.3 All electric actuators shall be tested for seat tightness test at 1.1 times of design/ operating pressure.

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8.4 Dimensional and functional check shall be carried out.

9.0 PAINTING

The surface preparation of all exterior and interior surfaces of valves shall include the following:

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

All exterior surfaces of valves shall be painted with primer and finish coated with coating of min. 150 microns thickness. Color shade etc. shall be subject to BHEL/ Customer approval.


10.0 CLEANING AND PROTECTION FOR DESPATCH:

10.1 Valve ends shall be protected from external damage and sealed against the ingress of dirt.

10.2 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.

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.


10.4 Valve Tag numbers shall also be incorporated in all the dispatch documents.

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SECTION-D1

VALVES


STANDARD TECHNICAL SPECIFICATION DATA SHEET – A1 QUALITY PLAN

										DATA SHEET- A1 CAST IRON GATE/ GLOBE/ NON RETURN VALVES 2x600MW ADILABAD SCCL TPP								SPECIFICATION NO. PE-TS-381-100-M002 VOL II B SECTION D REV. NO.: 00 DATE: 17.09.2012 SHEET 1 OF 2			
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN PRESSURE KG/CM ² (G) TEMP (DEG C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	HINGE PIN MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN	MAIN VALVES WITHOUT COMMISSIO NING SPARES NOS.	COMMISSIONING SPARES		MANDATORY SPARES (COMPLETE VALVES)				
													MM	MM	BONNET/ COVER GASKET (NOS)	GLAND PACKING (SETS)					
1	PW-8A, PW-10A (EACH 1 NOS.)	GLV	80	MAN	10 60	PW SYSTEM	PN 10 OF BSEN 13789	Clas per IS 210, FG 260	---	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092- 2 (PN 10) FLAT FACE	-	89.5	4.80	2	2	2				
2	ECW-72, 73 (EACH 2 NOS.)	NRV	300	-	12 60	ECW SYSTEM	PN 16 OF BSEN 12334	Clas per IS 210, FG 260	AISI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092- 2 (PN 16) FLAT FACE	-	323.9	6.00	-	4	2				
3	ACW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	7.5 10	ACW/ ECW SYSTEM	PN 10 OF BSEN 12334	Clas per IS 210, FG 260	AISI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092- 2 (PN 10) FLAT FACE	-	457	6.00	-	12	2				
TOTAL													18	2	18	6					

NOTES
 1. LEGENDS: MAN=MANUAL, GLV=GLOBE VALVE, NRV=NON RETURN VALVE
 2. COMMISSIONING SPARES: ONE SET OF GLAND PACKING & 1 NO. BONNET GASKET FOR EACH GLOBE VALVE ; ONE NO OF COVER GASKET FOR SWING CHECK NON RETURN VALVE



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

	DATA SHEET-A1 CAST IRON GATE,GLOBE AND NON RETURN VALVES 2x600MW ADILABAD SCCL TPP		SPECIFICATION NO. PE-TS-381-100-M002	
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Material of Construction

SL.N O	PART NAME	MATERIAL REQUIRED GATE/ GLOBE VALVE	MATERIAL REQUIRED SWING CHECK NON RETURN VALVE (NRV)
1	BODY	CI AS PER IS-210 Gr.FG 260 OR EQUIVALENT ASTM A126 Gr.B OR EQUIVALENT	CI AS PER IS-210 Gr.FG 260 OR EQUIVALENT ASTM A126 Gr.B OR EQUIVALENT
2	BONNET/YOKE/ COVER (NRV)	CI AS PER IS-210 Gr.FG 260 OR EQUIVALENT ASTM A126 Gr.B OR EQUIVALENT	CI AS PER IS-210 Gr.FG 260 OR EQUIVALENT ASTM A126 Gr.B OR EQUIVALENT
3	WEDGE/ DISC/ FLAP (NRV)	CI AS PER IS-210 Gr.FG 260 OR EQUIVALENT ASTM A126 Gr.B OR EQUIVALENT	CI AS PER IS-210 Gr.FG 260 OR EQUIVALENT ASTM A126 Gr.B OR EQUIVALENT
4	STEM/ HINGE PIN (NRV)	13% Cr. STEEL AS PER ASTM A182 Gr.F6a	ASTM A182 Gr. F316/ AISI 316
5	BODY SEAT RING, WEDGE/ DISC/ FLAP SEAT RING, BACK SEAT	13% Cr. STEEL AS PER ASTM A182 Gr.F6a (HARDNESS 250/ 300 HB)	13% Cr. AS PER ASTM A182 Gr.F6a (hardness 250/ 200 HB)
6	GLOBE VALVE DISC UPTO SIZE 150 NB	ASTM A217 Gr. CA15 UPTO SIZE 150 NB	----
7	DISC NUT/ WASHER	----	ASTM A182 Gr. F316/ AISI 316
8	COTTER PIN	----	AISI 316
9	HINGE	----	AISI 410
10	HINGE PIN BUSHING	----	AISI 316/ MANGANESE BRONZE
11	HINGE PIN PLUG/ COVER	----	13% Cr. AS PER ASTM A182 Gr. F316/AISI 316
12	DISC HOLDER FOR GLOBE VALVE	AISI 316	----
13	YOKE SLEEVE	ASTM A439 Gr. D2	----
14	GLAND PACKING	GRAPHITED ASBESTOS	----
15	GLAND	ASTM A351 Gr. CF8M/ AISI 316	----
16	GLAND FLANGE	AISI 410	----
17	BOLTS	ASTM A193 Gr.B7	ASTM A193 GR.B7
18	NUTS	ASTM A194 Gr.2H	ASTM A194 Gr.2H
19	HANDWHEEL	MALLEABLE IRON (NO OTHER ALTERNATE MATL)	----
20	STEM PROTECTION COVER	PVC (TRANSPARENT)	----
21	GASKET	CAF /GRAFOIL	CAF /GRAFOIL
22	Bearings	NBC/SKF make	----
23	Shaft & Gears	EN8	----
24	Gear box housing/cover	Cast Iron (TOTALLY ENCLOSED GEARING) BEVEL GEARS & WORM ARRANGEMENT	----
25	Name plate (For valve tag Nos.)	SS316 (2 MM THICK)	SS316 (2 MM THICK)



MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN					PROJECT : 2X600MW ADILABAD SCCL TPP			
		ITEM: CAST IRON GATE/GLOBE VALVE SIZE: 80 mm (NB)/ PN 10 RATING SUB-SYSTEM: WATER SYSTEM VALVES (PW SYSTEMS)		QP NO.: PE-QP-999-100-M004 REV.NO.: DATE:		PACKAGE : MAIN PACKAGE- LP VALVES CONTRACT NO. : MAIN-SUPPLIER : BHEL PEM NOIDA				
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	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.	M C N	11.

SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
					M	C/N				M	C	N	
1.0	MATERIALS												
1.1	BODY, BONNET, YOKE, WEDGE/DISC, SEAT, SPINDLE, BODY SEAT, BACK SEAT, THRUST PLATE	1. PHYS. PROPS a) TENSILE STRENGTH b) HARDNESS TEST 2. DIMENSIONS 3. SURFACE DEFECTS	MA MA MA	MEASUREMENT VISUAL	100% 100% 100%	100% 100% 100%	-DO- MSS-SP-55	APPD. DRG./ TECH. SPEC. MSS-SP-55	✓ -	P/ W P	V -	V -	-CORRELATION REQD. FOR BODY BONNET (REFER NOTE- A & B)
2.0	SPINDLE, DISC & BODY SEAT, BACK SEAT	1. SURFACE DEFECTS 2. HARDNESS	CR MA	PT TESTING	100% 100%	100% 100%	ASTM E 165 & TECH. SPEC. APP. DRG.	ASME B16.34 APP-III/ APP. DRG.	✓ ✓	P/ W P/ W	V V V V	V V V V	
3.0	IN-PROCESS INSPECTION												
3.1	MACHINING OF ALL COMPONENTS	1. DIMENSIONS, WORKMANSHIP AND FINISH. 2. SURFACE DEFECTS (MACHINED AREAS OF BODY, BONNET, DISC) 3. SUB SURFACE DEFECTS (SPINDLE, BODY / DISC SEATING)	MA CR CR	MEAS., VISUAL PT UT	100% 100% 100%	100% 100% 100%	MFG. DRG. ASTM E165 AND TECH. SPEC./ ASME B16.34 AND TECH. SPEC./	MFG. DRG. ASME B16.34 APP-III	- ✓	P P	- V	- V	
													1. IF DIA OF SPINDLE IS EQUAL OR GREATER THAN 40 mm. 2. SEAT THKN IS EQUAL OR GREATER THAN 25 MM

MANUFACTURER'S NAME AND ADDRESS		SIGNATURE		LEGEND: * RECORDS IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS 'W'		DOC. NO.:		REV. CAT.	
MANUFACTURER/SUB-SUPPLIER	MAIN-SUPPLIER								

FORMAT NO.: QS-01-QAI-P-09/F1-RI



MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT : 2X600MW ADILABAD SCCL TPP			
		ITEM: CAST IRON GATE/ GLOBE VALVE SIZE: 80 mm (NB)/ PN 10 RATING SUB-SYSTEM: WATER SYSTEM VALVES (PW SYSTEMS)		QP NO.: PE-QP-999-100-M004 REV.NO.: DATE:		PACKAGE : MAIN PACKAGE- LP VALVES		CONTRACT NO. :	
				PAGE: 2 OF 3		MAIN-SUPPLIER : BHEL PEM NOIDA			

SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C / N			9.	D*	M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D*	**	10.		11.
3.2	WEDGE/DISC & BODY SEAT, SPINDLE AND BACK SEAT ASSEMBLED VALVE	1. LAPPING	CR	BLUE MATCHING	100%	100%	UNIFORM METAL TO METAL CONTACT	METAL TO METAL	INSPN. REPORT	✓	P	V	V	FOR GATE VALVES ONLY
4.0		1. DIMENSIONS	MA	MEAS.	100%	10%	APPD.DRG.	APPD.DRG.	-DO-	✓	P	W	W	
5.0 5.1		2. WEAR TRAVEL	MA	MEAS.	100%	10%	-DO-	-DO-	-DO-	✓	P	W	W	
	3. VALVE LIFT	MA	MEAS.	100%	10%	-DO-	-DO-	-DO-	✓	P	W	W		
5.2	TESTING BODY, SEAT, BACK SEAT	1. LEAK TIGHTNESS OF BODY	CR	HYDRAULIC TEST	100%	100%	APPD. DRG./ TECH. SPEC.	NO LEAKAGE	IR/ TC	✓	P	W	W	
		2. LEAK TIGHTNESS OF BACK SEAT AND SEAT	CR	HYDRAULIC TEST	100%	100%	APPD. DRG./ TECH. SPEC.	NO LEAKAGE	IR/ TC	✓	P	W	W	
		3. LEAK TIGHTNESS OF SEAT	CR	PNEUMATIC TEST	100%	100%	-DO	-DO-	-DO-	✓	P	W	W	
	OPERATION AL TESTING	1. SMOOTH & FULL OPENING AND CLOSING	CR	MANUAL	100%	10%	TECH. SPEC.	SMOOTH OPERATION OF VALVES & CLEAR BORE	INSPN. REPORT	✓	P	W	W	
6.0	COMPLETE VALVES	1. OVERALL DIMENSIONS	MA	MEAS	100%	100%	APPD.DRG	APP.DRG.	-DO-	✓	P	W	W	
7.0	END CONNECTION DETAILS	1. DIMENSIONS	MA	MEAS.	100%	10%	APPD. DRG. / RELV STD	APPD. DRG. / RELV STD	-DO-	✓	P	W	W	
8.0	FINAL INSPECTION	1. CLEANLINESS & COMPLETENESS,	MA	VISUAL	100%	10%	APPD. DRG./ TECH. SPEC.	APPD. DRG./ TECH. SPEC	INSPN. REPORT	✓	P	W	W	

		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS 'W'				DOC. NO.:		REV..... CAT.....				
MANUFACTURER/ SUB-SUPPLIER				MAIN-SUPPLIER		FOR NTPC USE		REVIEWED BY		APPROVED BY		APPROVAL SEAL
		SIGNATURE										



MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN					PROJECT : 2X600MW ADILABAD SCCL TPP					
		ITEM: CAST IRON GATE/ GLOBE VALVE SIZE: 80 mm (NB)/ PN 10 RATING SUB-SYSTEM: WATER SYSTEM VALVES (PW SYSTEMS)					QP NO.: PE-QP-999-100-M004 REV.NO.: DATE:					
		PAGE: 3 OF 3										
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY		REMARKS	
1.	2.	3.	4.	5.	M	C/N	8.	9.	D*	M	C	N
9.0	PAINTING	1. SURFACE PREPARATION & UNIFORMITY OF THICKNESS	MI	VISUAL & MEASUREMENT	100%	TECH. SPEC.	TECH. SPEC.	-DO-	✓	P/ W	V	V
10.0	PACKING	AS PER BHEL TECH SPEC NAMEPLATE WITH VALVE TAG NOS	MA	VISUAL	100%	AS PER BHEL TECH. SPEC.	AS PER BHEL TECH. SPEC	-DO-	✓	P/ W	V	-

ABBREVIATIONS

CR = CRITICAL CHARACTERISTIC

MA = MAJOR CHARACTERISTIC

PT= PENETRANT TEST MPI= MAGNETIC PARTIAL INSPECTION

UT= ULTRASONIC TEST

NOTES:-

- A) MATERIAL TEST CERTIFICATES WITH PROPER IDENTIFICATION AND CO-RELATION SHALL BE FURNISHED FOR BODY & BONNET.
 B) FOR OTHERS PARTS MATERIAL TEST CERTIFICATES SHALL BE FURNISHED.

		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE, CHIP: NTPC SHALL IDENTIFY IN COLUMN "N" AS 'W'		DOC. NO.:		REV..... CAT.....	
MANUFACTURER/ SUB-SUPPLIER	MAIN-SUPPLIER						
SIGNATURE				REVIEWED BY	APPROVED BY	APPROVAL SEAL	


FORMAT NO.: QS-01-QAI-P-09/F1-R1

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ENGG. DIV./QA&I



MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN						PROJECT : 2X600MW ADILABAD SCCL TPP											
		ITEM: CAST IRON NON RETURN VALVES		QP NO.: PE-QP-999-100-M004 REV.NO. 00 DATE: 17-09-12		PACKAGE : MAIN PACKAGE- LP VALVES CONTRACT NO. : MAIN-SUPPLIER : BHEL PEM NOIDA		ACCEPTANCE NORMS		FORMAT OF RECORD		AGENCY		REMARKS					
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT												
1.	2.	3.	4.	5.	M	C / N	6.	7.	8.	9.	D*	**	10.	11.					
2.2	DISC & BODY SEAT, HINGE PIN	1. SURFACE DEFECTS	CR	PT	100%	100%	100%	ASTME: 165 & TECH.SPEC.	ASME B16.34 APP-IV	TEST CERT.	✓	P	V	V	GREATER THAN 25 MM				
2.3	DISC. AND BODY SEAT RING	2. HARDNESS	MA	TESTING	100%	100%	100%	APP. DRG.	APP. DRG. / ANSI B16.34	TEST CERT.	✓	P	V	V					
3.0	ASSEMBLY	1. LAPPING	CR	BLUE MATCHING	100%	100%	100%	UNIFORM METAL TO METAL CONTACT		-DO-	✓	P	V	V					
4.0	TESTING	1. DIMENSIONS	MA	1. MEASURE MENT	100%	10%	10%	APPD. DRG. / TECH.SPEC.	APPD. DRG. / TECH.SPEC.	INSPN. REPORT	✓	P	W	W					
4.1	BODY	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	100%	100%	APPD. DRG. / TECH.SPEC.	NO LEAKAGE	INSPN. REPORT	✓	P	W	W					
4.2	SEAT	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST 1. At Specified Pressure 2. At 25% of Seat Tightness Test	100%	100%	100%	APPD. DRG. / TECH.SPEC.	MAX ALLOWABLE RATE FOR SEAT LEAKAGE 2 MM ³ /S XDN (EXPRESSED IN mm) AS PER CL.4.2.3 OF BSEN 12334 & EQUIVALENT TO RATE G OF BSEN 12266-1	INSPN. REPORT	✓	P	W	W					
4.3	COMPLETE VALVE	PERFORMANCE	CR	OPERATIO	100%	100%	100%	TECH. SPEC.	TECH. SPEC.	INSPN.									
MANUFACTURER/ SUB-SUPPLIER		SIGNATURE		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE. CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS "W"										DOC. NO.:		REV: 00		CAT.....	
				FOR NTPC USE		REVIEWED BY		APPROVED BY		APPROVAL SEAL									

	TECHNICAL SPECIFICATION CAST IRON GATE, GLOBE & NON RETURN VALVES 2X600MW ADILABAD SCCL TPP	SPECIFICATION NO. PE-TS-381-100-M002	
		VOLUME : IIB	
		SECTION: D	
		REV. NO.: 00	DATE: 17.09..2012
		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 ~~Torque calculations for actuator selected.~~
 - 1.4 ~~Actuator data sheet with Wiring Diagram.~~
 - 1.5 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.

2X600MW ADILABAD SCCL TPP

VOLUME – III

TECHNICAL SCHEDULES


FOR

CAST IRON GATE/GLOBE/NON RETURN VALVES

SPECIFICATION NO. PE-TS-381-100-M002




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

	CAST IRON GATE/GLOBE/NON RETURN VALVES 2X600MW ADILBAD SCCL TPP		SPECIFICATION NO. PE-TS-381-100-M002
			VOLUME : III
			SECTION:
			REV. NO.: 00
			DATE: 17.09.2012
	SHEET 1 OF 1		

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1	COMPLIANCE SHEET
2	SCHEDULE OF DEVIATIONS
3	SCHEDULE OF DECLARATIONS
4	SCHEDULE OF PRICES

	COMPLIANCE SHEET CAST IRON GATE/GLOBE/NON RETURN VALVES 2X600MW ADILABAD SCCL TPP	SPECIFICATION NO.:PE-TS-381-100-M002	
		VOLUME : III	
		SECTION:	
		REV. NO. 00	DATE : 17.09.2012
		SHEET 1 OF 2	

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

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

1.	Technical requirements as per Data sheet-A & Standard Technical Specification of Vol IIB Section-D	Accepted	Not Accepted
2.	Technical requirements as per Data sheet A2 (Actuator data sheet with wiring diagram) of Vol IIB Section-D	Accepted	Not Accepted
3.	Quality Plan	Accepted	Not Accepted
4.	Specific Technical requirements of Vol IIB Section-C	Accepted	Not Accepted
5.	Documentation requirement as per Data sheet-C of Vol IIB Section-D	Accepted	Not Accepted

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

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


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

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

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

G) The commissioning spares (if any) are supplied on 'As Required Basis' & prices for same shall be quoted in the price bid format. If the bidder has not quoted for commissioning spares at tender

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

	COMPLIANCE SHEET CAST IRON GATE/GLOBE/NON RETURN VALVES 2X600MW ADILABAD SCCL TPP		SPECIFICATION NO.:PE-TS-381-100-M002	
			VOLUME : III	
			SECTION:	
			REV. NO. 00	DATE : 17.09.2012
			SHEET 2 OF 2	

stage and if the same are actually required during commissioning, then the same shall be supplied by bidder without any cost to BHEL.

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

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



TITLE

*** SCHEDULE OF DEVIATIONS**

() From Technical Specifications (Volume –II B)

SPECIFICATION NO
PE-TS-381-100-M002

VOL III

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

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

	TITLE *SCHEDULE OF DECLARATIONS	SPECIFICATION NO PE-TS-381-100-M002
		VOL III
		SHEET OF

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

DECLARATION

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

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

Bidder’s Company Name

.....

Authorised representative’s
Signature


.....

Name

.....

Bidder’s Name

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

		PRICE SCHEDULE (MAIN VALVES WITHOUT COMMISSIONING SPARES) CAST IRON GATE/ GLOBE/ NON RETURN VALVES 2X600MW ADILABAD SCCL TPP										SPECIFICATION NO. PE-TS-381-100-M002			
												VOL III			
												SECTION			
												REV. NO.: 00 DATE: 17/09/2012			
												SHEET 1 OF 3			

Prices to be quoted in this format only

1	2	3	4	5	6		7	8	9	10	11	12	13	14		15	16
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN	TEMP (DEG C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	HINGE PIN MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN		MAIN VALVES QTY WITHOUT COMMISSIONING SPARES NOS.	UNIT PRICE
														MM	MM		
1	PW-8A, PW-10A (EACH 1 NO.)	GLV	80	MAN	10	60	PW SYSTEM	PN 10 OF BSEN 13789	CI as per IS 210, FG 260	---	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 10) FLAT FACE	-	89.5	4.80	2	
2	ECW-72, 73 (EACH 2 NOS.)	NRV	300	-	12	60	ECW SYSTEM	PN 16 OF BSEN 12334	CI as per IS 210, FG 260	AISI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 16) FLAT FACE	-	323.9	6.00	4	
3	ACW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	7.5	60	ACW/ECW SYSTEM	PN 10 OF BSEN 12334	CI as per IS 210, FG 260	AISI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 10) FLAT FACE	-	457	6.00	12	
	ECW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	10												
														TOTAL		18	

NOTES

- LEGENDS: MAN-MANUAL, GLV-GLOBE VALVE, NRV-NON RETURN VALVE
- COMMISSIONING SPARES: ONE SET OF GLAND PACKING & 1 NO. BONNET GASKET FOR EACH GLOBE VALVE, ONE NO OF COVER GASKET FOR SWING CHECK NON RETURN VALVE
- Main valve prices shall BE EXCLUSIVE of cost of Commissioning Spares prices.
- Bidder is required to quote unit price of each item under commissioning spares separately & individually i.e. prices of all commissioning spares shall not be clubbed/ included in the unit price of Main valves.
- Bidder to note that the Mandatory spares valves are only complete valve assembly with actuator and are required without any commissioning spares. Hence unit price of Mandatory spare valve shall NOT BE INCLUSIVE of prices of commissioning spares and therefore, shall be quoted separately.

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

SPECIFICATION NO. PE-TS-381-100-M002

VOL. III

SECTION

REV. NO.: 00 DATE: 17/09/2012

2SHEET 2 OF 3


Prices to be quoted in this format only

SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN PRESSURE KG/CM ² (G) TEMP (DEG C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY,BONNET & DISC MATERIAL	HINGE PIN MATERIAL	OTHER TRIM MATERIAL AND BODY & DISC SEAT AND	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN	COMMISSIONING SPARES	UNIT PRICE
1	PW-8A, PW-10A (EACH 1 NO.)	GLV	80	MAN	10 60	PW SYSTEM	PN 10 OF BSEN 13789	Ci as per IS 210, FG 280	---	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 10) FLAT FACE	-	89.5 4.80	BONNET/ COVER GASKET 2	
2	ECW-7Z, 73 (EACH 2 NOS.)	NRV	300	-	12 80	ECW SYSTEM	PN 16 OF BSEN 12334	Ci as per IS 210, FG 280	AISI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 16) FLAT FACE	-	323.9 6.00	COVER GASKET 4	
3	ACW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	7.5 60	ACW/ ECW SYSTEM	PN 10 OF BSEN 12334	Ci as per IS 210, FG 280	AISI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 10) FLAT FACE	-	457 6.00	COVER GASKET 12	
	ECW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	10										TOTAL 20

NOTES

1. LEGENDS: MAN-MANUAL, GLV-GLOBE VALVE, MRV-MON RETURN VALVE
2. COMMISSIONING SPARES: ONE SET OF GLAND PACKING & 1 NO. BONNET GASKET FOR EACH GLOBE VALVE, ONE NO OF COVER GASKET FOR SWING CHECK NO RETURN VALVE
3. Main valve prices shall BE EXCLUSIVE of cost of Commissioning spares
4. Bidder is required to quote unit price of each item under commissioning spares separately, & individually i.e. prices of all commissioning spares shall not be clubbed/ included in the unit prices of Main valves
5. Bidder to note that the Mandatory spares valves are only complete valve assembly with actuator and are required without any commissioning spares. Hence unit price of Mandatory spare valve shall NOT BE INCLUSIVE of prices of commissioning spares and therefore, shall be quoted separately

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

	PRICE SCHEDULE (MANDATORY VALVES) CAST IRON GATE/ GLOBE/ NON RETURN VALVES 2X600MW ADILABAD SCCL TPP														
	SPECIFICATION NO. PE-TS-381-100-M002														
	VOL III														
	SECTION														
	REV. NO.: 00 DATE: 17/09/2012														
SHEET 3 OF 3															

Prices to be quoted in this format only

SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN		SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	HINGE PIN MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN		MANDATORY VALVES (COMPLETE VALVES) NOS.	UNIT PRICE
					TEMP (DEG C)	PRESSURE KG/CM ² (G)								MM	MM		
1	PW-8A, PW-10A (EACH 1 NO.)	GLV	80	MAN	60	10	PW SYSTEM	PN 10 OF BSEN 13789	CI as per IS 210, FG 260	---	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 10) FLAT FACE	-	89.5	4.80	2	
2	ECW-72, 73 (EACH 2 NOS.)	NRV	300	-	60	12	ECW SYSTEM	PN 16 OF BSEN 12334	CI as per IS 210, FG 260	ANSI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 16) FLAT FACE	-	323.9	6.00	2	
3	ACW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	60	7.5	ACW/ECW SYSTEM	PN 10 OF BSEN 12334	CI as per IS 210, FG 260	ANSI 316	13% Chromium steel as per ASTM A 182 Gr. F6a	FLANGED AS PER BSEN 1092-2 (PN 10) FLAT FACE	-	457	6.00	2	
	ECW-4, 5, 6 (EACH 2 NOS.)	NRV	450	-	10												
TOTAL																6	

NOTES

- LEGENDS: MAN-MANUAL; GLV=GLOBE VALVE; NRV=NON RETURN VALVE
- COMMISSIONING SPARES: ONE SET OF GLAND PACKING & 1 NO. BONNET GASKET FOR EACH GLOBE VALVE; ONE NO. OF COVER GASKET FOR SWING CHECK NON RETURN VALVE
- Main valve prices shall BE EXCLUSIVE of cost of Commissioning Spares prices.
- Bidder is required to quote unit price of each item under commissioning spares separately & individually i.e. prices of all commissioning spares shall not be clubbed/ included in the unit price of Main valves.
- Bidder to note that the Mandatory spares valves are only complete valve assembly with actuator and are required without any commissioning spares. Hence unit price of Mandatory spare valve shall NOT BE INCLUSIVE of prices of commissioning spares and therefore, shall be quoted separately.

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