

2 X 600 MW ADILABAD SCCL TPP


VOLUME – IIB

**TECHNICAL SPECIFICATION
FOR
STEEL GATE, GLOBE AND NON RETURN VALVES**

SPECIFICATION NO. PE-TS-381-100-M001



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

	TITLE:		SPECIFICATION NO. PE-SS-999-100-Q001	
	PREAMBLE		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-D1


VALVES

STANDARD TECHNICAL SPECIFICATION DATA SHEET – A1 QUALITY PLAN

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SECTION-A

SCOPE OF ENQUIRY

	TECHNICAL SPECIFICATION STEEL GATE, GLOBE & NON RETURN VALVES 2 X 600 MW ADILABAD SCCL TPP		SPECIFICATION NO. PE-TS-381-100-M301	
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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 steel gate, globe & non return valves complete with all accessories as per the requirements mentioned in different sections of the specification for 2X600 MW 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 steel gate, globe & non return valves shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of steel 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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SECTION-B


PROJECT INFORMATION

	TECHNICAL SPECIFICATION CAST IRON GATE, GLOBE & NON RETURN VALVES 2X600MW ADILABAD SCCL TPP	SPECIFICATION NO. PE-TS-381-100-M002	
		VOLUME : IIB	
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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		SPECIFICATION NO. PE-TS-381-100-M001
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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.

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.

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5 PAINTING REQUIREMENT:

No painting needs to be done as these are stainless steel valves.

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.

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.

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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 SPECIFICATIONS

D1: FOR VALVES

D2: FOR ACTUATORS

DATA SHEET – C



**STANDARD TECHNICAL
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SPECIFICATION NO. PE-SS-999-100-M001
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1.0 GENERAL

This specification covers the design, materials, construction features, manufacture and testing of Carbon Steel and Alloy Steel Gate, Globe and 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, material, construction, manufacture, inspection and testing of valves shall conform to the latest applicable codes and standards.

The design and testing of valves covered under this specification shall be governed by the following standards. However the valves conform to other International Standards may be acceptable provided they are equivalent or superior to those listed below:

S.NO.	DESCRIPTION	DESIGN STANDARD	TESTING STANDARD
1	For Gate, Globe and Non-Return valves of sizes 50 mm and smaller	BS EN ISO 15761/ANSI B16.34	ISO 5208/ ASME B16.34
2	Gate valves of sizes 65 mm to 1050 mm.	BS EN ISO 10434/ANSI B16.34/ ANSI B16.10/API 600	ISO 5208/ API 598/ASME B16.34
3	Globe valves of sizes 65 mm to 400 mm.	BS:1873 /ANSI B16.34/ ANSI B16.10	BSEN ISO 12266/ ASME B16.34
4	Non-return valves of sizes 65 mm to 800 mm.	BS:1868 /ANSI B16.34/ ANSI B16.10	BSEN ISO 12266/ ASME B16.34

2.2 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

3.0 DESIGN REQUIREMENTS

3.1 The valves shall be used for services like steam, condensate water, feed water, D.M. Water, oil and gas unless otherwise specified in Data Sheet-A1. 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 Valves coming under the purview of IBR shall satisfy all the conditions of IBR.

3.3 Unless otherwise specified, all valves of sizes up to and including 50 mm NB shall have a forged steel body & sizes 65 mm NB & above shall have cast steel body.

3.4 Materials

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

3.4.2 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.



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4.0 CONSTRUCTIONAL FEATURES

4.1 End Connections:

4.1.1 Socket details of valves with socket welding ends shall be as per ANSI B16.11 and shall suit pipe size indicated in Data sheet-A1.

4.1.2 The edge profile for valves with butt welding ends shall be as per ANSI B16.25 and shall suit pipe size indicated in Data sheet-A1.

4.1.3 All valves with Flanged ends shall have raised face flanges and drilling details as per ANSI B16.5. For Rubber lined valves, face of flange shall be flat face.

4.2 Gate and Globe valves shall be of outside screw and yoke type with rising spindle and shall be capable of being closed against the design pressure.

4.3 All Gate, Globe and check 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.

4.4 Gate and globe valves shall have back seating arrangement for replacement of packing while working under full working pressure.

4.5 Gate and globe valves of size 50 mm NB and above shall be provided with position indicator unless otherwise specified.

4.6 For Globe valves of size 50 mm NB and above, the disc shall be free to revolve on the spindle.

4.7 Globe valves for regulating duties shall be provided with spherical type disc or parabolic type disc and shall be capable of regulating the flow from zero flow to fully open. All regulating valves shall be designed to prevent erosion of valve discs and seats when the valves are operated partially opened.

4.8 Differential hardness shall be provided between seat and disc facings. Stellite thickness shall be minimum 3 mm unless otherwise specified.

4.9 All gate valves of 600 lbs and higher-pressure rating shall have flexible wedge or parallel slide type of disc.

4.10 All valves of pressure rating up to 600 lbs shall have bolted bonnet construction and 900 lbs and above shall have bonnet construction of the pressure seal type.

4.11 Eye bolts shall be provided to facilitate handling heavy valves or part of valves, where the weight is greater than 500 Kg.

4.12 Gate and globe valves shall be required with integral bypass valve, if specified in Data Sheet-A1. Size of the integral bypass shall conform to MSS-SP-45 as a minimum standard.

4.13 All gate and globe valves shall be closed by rotating the hand wheel in the clockwise direction when looking at the face of the hand wheel. Where valves are not of the rising pattern, the hand wheel shall also be rotated in clockwise direction to close the valve when viewed from the outer end of the spindle. In case where the hand wheel is not directly attached to the valve spindle, suitable gearing shall be introduced to reconcile the above condition. The face of each hand wheel shall be clearly marked "Open" and "Shut" with arrows indicating the direction of rotation to which they refer. 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.

4.14 All valves upto 50 mm shall have reduced sized ports and 65 mm and above shall have full sized Ports.

4.15 All valves shall be fitted with indicators so that it may be readily seen whether the valves are open or shut.



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4.16 All Gate, globe and check valves shall be designed for reconditioning of seating surfaces and replacement of Stem & Disc without removing the valve body from pipe line.

4.17 Stop check valves shall have full floating and accurately guided discs.

4.18 The body seat for Swing check valves shall be inclined to such an angle to minimize chatter.

4.19 Check valves shall be provided with outside lever & counter weight if specified in Data sheet A1, for quick closing in case of low velocities so that a minimum pressure is required to open disc and that resistance to flow past the disc is minimized.

5.0 SPECIAL FEATURES OF VALVES

5.1 Extension spindle arrangement:

5.1.1 Extension spindle/ chain operation to the valves shall be provided wherever required as specified in Data Sheet A1.

5.1.2 Where required as specified in Data sheet A1, 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.

5.2 Locking arrangement

For valves that are to be kept locked in full "Open" or "Close" position, if specified in Data Sheet A1, the locking arrangement shall be provided with a non-detachable locking arrangement.

5.3 Valves for Vacuum Service:

5.3.1 Valves of size up to 50 NB and operating under vacuum shall be offered with long neck gland & special and deep gland packing in order to avoid ingress of atmospheric air entry to the system through gland of the valves. In such case the depth of the stuffing box shall be at least 25% more than the normal valves and suitable for vacuum service.

5.3.2 All valves of size 65NB and above and operating under vacuum conditions shall be provided with water sealed glands. Valves with sealed gland arrangement shall be required with 3/8" BSP connections duly plugged on both sides of the bonnet. Sealing water shall be supplied at 4 ata and 50°C, unless otherwise stated in Data sheet-A.

5.4 Valves with limit switch:

Valves with limit switches (as mentioned in Data sheet- A1) 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.

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.



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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 a smooth easy 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 for all motor drives shall be based on ambient temperature of 60°C.

7.4 Type of oil/grease to be used and its annual consumption (based on 100 operations per year) shall be indicated by the bidder.

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 customer without any financial implications to meet customer project technical requirements.

8.2 Hydrostatic/Air Tests:

8.2.1 Manually operated valves: All valves shall be tested hydraulically for strength, tightness of seats and tightness, of back seating at the pressures as mentioned in BSEN ISO 12266/ISO 5208/ API 598/ASME B16.34

8.2.2 Motor operated Valves:

- All the motor operated valves shall be tested hydraulically for seat/backseat with the motor actuator at a pressure as specified in the actuator data sheet of Data sheet-A2.
- Motorized valves shall also be tested hydraulically for body, seat and backseat at the pressures as mentioned in BSEN ISO 12266/ISO 5208/ API 598/ASME B16.34 with hand wheel on the actuator.
- All electric actuators shall be tested for seat tightness test at 1.1 times of design/ operating pressure.

8.3 Gate and Globe valves seats shall also be tested on air at a pressure of 7kg/cm².

8.4 Dimensional and functional checks shall be carried out.

8.5 Valves coming under the purview of IBR shall be inspected by Independent Inspecting Authority approved by Indian Boiler Board and the test certificate in IBR form III-C duly countersigned by IBR approved authority shall be submitted.

9.0 PAINTING

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

- Removal of oil, grease and dirt



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- 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 For flanged valves, 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 Valves with screwed, socket welding and butt-welding ends Valves 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.
- 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.

<div>  <div> DATA SHEET- A1 STEEL GATE/ GLOBE/ NON RETURN VALVES 2X500 MW ADILABAD SCCL TPP </div> </div>										SPECIFICATION NO. PETS-JBT-100-0001 VOL II B SECTION D REV. NO. 00 DATE: 17.05.2012 SHEET 1 OF 3									
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN		SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN		MAIN VALVES QTY WITHOUT COMMISSIONING SPARES	+++COMMISSIONING SPARES			MANDATORY SPARES COMPLETE VALVES WITH ACTUATOR ASSEMBLY (AS PER CLAUSE 1.24.00 SNO 9 OF MANDATORY SPARES LIST)
					KG/CM ² (g)	TEMP (DEG C)							MM	MM		BONNET COVER GASKET (NOS)	GLAND PACKING (SETS)	ACTUATOR SPARES (SETS)	
1	ECW-180 TO ECW-184 (EACH 2 NOS)	GLV	25	MAN	12	60	ECW SYSTEM	#600 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	---	33.4	3.38	10	10	---	---	2
2	ECW-108 (2 NOS), ECW-110 (2 NOS), ECW-112 TO ECW-114 (EACH 2 NOS)	GLV	40	MAN	12	60	ECW SYSTEM	#600 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	---	48.26	3.68	10	10	---	---	2
3	ECW-101 (2 NOS), ECW-103 (2 NOS)	GLV	50	MAN	12	60	ECW SYSTEM	#600 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	---	60.3	3.91	4	4	4	---	2
4	ECW-100 (2 NOS), ECW-102 (2 NOS)	GLV	50	MO	12	60	ECW SYSTEM	#600 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	MOTORISED ELECTRIC ACTUATOR WITH INTEGRAL STARTERS QTY=40 - 60 SECS	60.3	3.91	4	4	4	4	2
5	ECW-104	GLV	40	AUTO	12	60	ECW SYSTEM	#600 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	---	48.26	3.68	4	4	---	---	2
															32	32	28	4	10


GLOBE VALVE NRV=NON RETURN VALVE
 PACKING & 1 NO. BONNET GASKET FOR EACH GATE VALVE ONE NO OF COVER GASKET FOR SWING CHECK NON RETURN VALVE ALSO 1 NO ACTUATOR "O" RINGS AND

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

	DATA SHEET-A1 STEEL GATE,GLOBE AND NON RETURN VALVES 2X600 MW ADILABAD SCCL TPP		SPECIFICATION NO. PE-TS-999-100-M001	
			VOLUME-IIB	
			SECTION : D	
			REV. NO.: 00	DATE: 17.09.2012
			Sheet 2 of 3	

MATERIAL DATA SHEET
(FORGED STAINLESS STEEL GLOBE VALVE)

SL.N O	PART NAME	MATERIAL REQUIRED
1	BODY	ASTM A182 Gr.F304
2	BONNET/YOKE	ASTM A182 Gr.F304 (BOLTED)
3	BODY SEAT RING (SCREWED)	ASTM A182 Gr.F316 + STELLITE
4	STEM, BACK SEAT	ASTMA 182 Gr.F316 (BACK SEAT STELLITE)
5	DISC (CONICAL/TAPER PLUG)	ASTM A182 Gr.F304 + STELLITE
6	DISC HOLDER FOR GLOBE VALVE	ASTM A182 Gr.F304 + STELLITE
7	YOKE SLEEVE	ASTM A182 Gr.F316
8	GLAND PACKING	GRAFOIL
9	GLAND	ASTM A351 Gr. CF8M/ AISI 316
10	GLAND FLANGE	ASTM A351 Gr. CF8M/ AISI316
11	INDICATOR & INDICATING SCALE WITH FITTINGS	AISI316
12	BOLTS	ASTM A193 B8M
13	NUTS	ASTM A 194 Gr.8M
14	HANDWHEEL	MALLEABLE IRON
15	STEM PROTECTION COVER	PVC (TRANSPARENT)
16	GASKET	SWG (GRAFOIL)
17	Bearings	NBC/SKF make
18	Shaft & bevel gears	EN8
19	Gear box housing/cover	Cast Iron (Enclosed Type) BEVEL GEARS
20	Name plate (For valve tag nos.)	SS316 (2 MM THICK)
21	Painting details	No painting needs to be done as these are stainless steel body valves

	DATA SHEET-A1 STEEL GATE,GLOBE AND NON RETURN VALVES 2X600 MW ADILABAD SCCL TPP		SPECIFICATION NO. PE-TS-999-100-M001	
			VOLUME-IIB	
			SECTION : D	
			REV. NO.: 00	DATE: 17.09.2012
			Sheet 3 of 3	

MATERIAL DATA SHEET
FORGED STAINLESS STEEL NON RETURN VALVE

SL.NO	PART NAME	MATERIAL (REQUIRED)
1.	Body	ASTM A182 Gr.F304
2.	Cover	ASTM A182 Gr.F304
3.	Disc (Fully guided)	ASTM A182 Gr.F304 +STELLITE
4.	Disc nut/ washer	ASTM A182 Gr. F316
5.	Body seat ring	ASTM A182 Gr. F316+STELLITE
6.	Gasket	SWG SS316 (GRAFOIL)
7.	Bolts	ASTM A193 B8M
8.	Nuts	ASTM A 194 Gr.8M
9.	Name plate	SS316 (2 mm Thick)
10.	Painting details	No painting needs to be done as these are stainless steel body valves

MFGR.'s LOGO		MANUFACTURER'S NAME & ADDRESS			MANUFACTURING QUALITY PLAN				PROJECT : 2X600 ME ADILABAD SCCL				
					ITEM: FORGED STAINLESS STEEL GATE / GLOBE VALVES SIZE 50 NB/CLASS 800 QP NO.: PE-QP-381-100-M004 DATE: 17.09.2012 PAGE: 1 OF 3 SUB-SYSTEM: VALVES FOR WATER SYSTEM (EQUIPMENT COOLING SYSTEM)				PACKAGE : LP PIPING STEEL VALVES (WATER SYS) CONTRACT NO.: CONTRACTOR : BHEL PEM NOIDA CUSTOMER :				
S. 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.	10.	11.	12.	13.	14.
					M	C/N							
1.0	MATERIALS	1. PHYS. CHEM. PROPS	MA	PHYS. CHEM. TESTS	ONE/ HEAT	ONE/ HEAT	APPD. DRG. & RELV. MATL STANDARD	APPD. DRG. TECH. SPEC.	TEST CERT.	✓	P/W	V	V
1.1	BODY, BONNET, YOE, WEDGE/DISC, SEAT, SPINDLE, BODY SEAT, BACK SEAT	2. HEAT TREATMENT	MA	REVIEW OF H.T. RECORDS	100%	100%	-DO-	-DO-	H.T. INTERNAL INSPN RECORD	✓	P/W	V	V
		3. SURFACE DEFECTS	MA	VISUAL	100%	100%	MSS-SP-55	MSS-SP-55	INSPN. REPORT	✓	P	V	-
1.2	BODY, BONNET & DISC	SURFACE DEFECTS	CR	PT	100%	100%	ANSI B16.34	ANSI B16.34	INSPN. REPORT	✓	P	V	V
2.0	SS/STELLITE DEPOSIT ON WEDGE/DISC & BODY SEAT, BACK SEAT	1. SURFACE DEFECTS	CR	PT	100%	100%	ASTM B 16.34	APPD. DRG	-DO-	✓	P	V	V
		2. HARDNESS	MA	TESTING	100%	100%	APPD. DRG	APPD. DRG	TEST CERT.	✓	P	V	V
3.0	IN-PROCESS INSPECTION	1. DIMENSIONS, WORKMANSHIP AND FINISH	MA	MEAS., VISUAL	100%	100%	MFG. DRG.	MFG. DRG.	LOG BOOK	-	P	-	-
3.1	MACHINING OF ALL COMPONENTS												

MANUFACTURER'S NAME & ADDRESS		LEGEND: * RECORDS IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.		DOC. NO.		REV. CAT.	
MANUFACTURER/ SUB-SUPPLIER		MAIN-SUPPLIER		FOR NTPC USE			
SIGNATURE				REVIEWED BY		APPROVED BY	
						APPROVAL SEAL	



MFR's LOGO		MANUFACTURER'S NAME & ADDRESS			MANUFACTURING QUALITY PLAN					PROJECT : 2X600 ME ADILABAD SCCL					
					ITEM: FORGED STAINLESS STEEL GATE / GLOBE VALVES SIZE 50 NB/CLASS 800 SUB-SYSTEM: VALVES FOR WATER SYSTEM (EQUIPMENT COOLING SYSTEM) QP NO.: PE-QP-381-100-M004 DATE: 17.09.2012 PAGE: 2 OF 3					PACKAGE : LP PIPING STEEL VALVES (WATER SYS) CONTRACT NO.: CONTRACTOR : BHEL PEM NOIDA CUSTOMER :					
S. 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	7.	8.	9.	D	M	C	N	10.	11.
3.2	WEDGE/DISC & BODY SEAT RING AND BACK SEAT ASSEMBLY	1. LAPPIING	CR	PT (MACHINED AREA OF BODY & BOWNET & DISC) BLUE MATCHING	100%	100%	ANSI B16.34	ANSI B16.34 APPENDIX-III	-DO-	✓	P	V	V		
4.0		1. DIMENSIONS 2. WEAR TRAVEL 3. VALVE LIFT	MA MA MA	MEAS. MEAS. MEAS.	100% 100% 100%	100% 100% 100%	UNIFORM METAL TO METAL CONTACT APPD. DRG. -DO-	APPD. DRG. -DO- -DO-	INSPN. REPORT -DO- -DO-	✓ ✓ ✓	P P P	W W W	W W W		FOR GATE VALVES ONLY
5.0	TESTING BODY, SEAT, BACK SEAT	1. LEAK TIGHTNESS OF BODY 2. LEAK TIGHTNESS OF BACK SEAT AND SEAT 3. LEAK TIGHTNESS OF SEAT	CR CR CR	HYDRAULIC TEST HYDRAULIC TEST PNEUMATIC TEST	100% 100% 100%	10% 10% 10%	APPD. DRG./TECH. SPEC. APPD. DRG./TECH. SPEC. -DO	NO LEAKAGE LEAKAGE PERMISSIBLE AS PER ISO 15761 -DO-	INSPN REPORT -DO- -DO-	✓ ✓ ✓	P P P	W W W	W W- W		
5.2	OPERATIONAL TESTING														

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 "V"

MANUFACTURER/ SUB-SUPPLIER		MAIN-SUPPLIER		SIGNATURE		DOC. NO.	REV. CAT...
						FOR NTPC USE	REVIEWED BY
						APPROVED BY	APPROVAL SEAL

MFR.'s LOGO		MANUFACTURER'S NAME & ADDRESS			MANUFACTURING QUALITY PLAN					PROJECT : 2X600 ME ADILABAD SCCL			
					ITEM: FORGED STAINLESS STEEL GATE / GLOBE VALVES SIZE 50 NB/CLASS 800 SUB-SYSTEM: VALVES FOR WATER SYSTEM (EQUIPMENT COOLING SYSTEM)					OP NO.: PE-QP-331-100-M004 DATE: 17.09.2012 PAGE: 3 OF 3			
S. 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.	1. MANUALLY OPERATED VALVES	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 END CONNECTION DETAILS	1. OVERALL DIMENSION	MA	MEAS.	SAMPLE	SAMPLE	APPD.DRG.	APPD.DRG. / REL.V.STD	-DO-	✓	P	W	W
7.0		1. DIMENSIONS	MA	MEAS.	100%	10%	APPD.DRG. / TECH. SPEC.	APPD.DRG. / REL.V.STD	-DO-	✓	P	W	W
8.0	FINAL INSPECTION	1. CLEANLINESS & COMPLETENESS AS PER BHEL TECH. SPEC	MA	VISUAL	100%	100%	APPD.DRG. / TECH. SPEC.	APPD.DRG. / TECH. SPEC	INSPN. REPORT	✓	P	W	W
9.0	PACKING		MA	VISUAL	100%	100%	TECH.SPEC	TECH. SPEC	-DO-	✓	P/W	V	-

ABBREVIATIONS
 CR = CRITICAL CHARACTERISTIC
 MA = MAJOR CHARACTERISTIC
 PT = PENETRANT 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.

MANUFACTURER/ SUB-SUPPLIER		MAIN-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'		FOR NTPC USE		DOC. NO.		REV. CAT. ...	
						REVIEWED BY		APPROVED BY		APPROVAL SEAL			



MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN ITEM : STAINLESS STEEL NON RETURN VALVES SIZE 40 NB/ CL. 800 SUB-SYSTEM: EQUIPMENT COOLING WATER SYSTEM				OP NO.: PE-QP-381-100-M004 REV.NO.: 00 DATE: 17.09.2012 PAGE: ...1 OF ...3				PROJECT : 2X600 MW ADILABAD SCCL TPP PACKAGE : MAIN PLANT - LP PIPING 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.	D*	M	C	N	11.

1.0	MATERIALS	1. PHYSICAL, CHEMICAL PROPS.	MA	PHYS. CHEM. TESTS	100%	100%	APPD. DRG.	APPD. DRG./REL.V STD.	T.C.	✓	P/W	V		CORRELATION REQD. FOR BODY & COVER. (Refer Notes A & B) SOLUTION ANNEALING
1.1	BODY, COVER, BODY SEAT RING, DISC, HINGE PIN ETC.	2. HEAT TREATMENT	MA	REVIEW OF HT CHART RECORDS	100%	100%	-DO-	-DO-	HT INTERNAL RECORDS INSPN REPORT	✓	P/W	V		
1.2	BODY, COVER & DISC	3. SURFACE DEFECTS	MA	VISUAL	100%	100%	MSS-SP-55	MSS-SP-55	INSPN REPORT	✓	P/W	V		PT FOR ALL SS VALVES
2.0	IN PROCESS	1. SURFACE DEFECTS	CR	PT	100%	100%	ASME B16.34	ASME B16.34/APPENDIX-III	TEST CERT.	✓	P	V	V	
2.1	SS/STELLITE DEPO-SIT ON BODY SEAT RING, DISC/SEAT FOR CL. 800 ONLY	2. HARDNESS (CL. 800)	MA	MEASURE MENT	100%	100%	APPD. DRG	ASME B16.34/APPENDIX-III APPD. DRG	TEST CERT.	✓	P	V	V	
2.2	MACHINING OF ALL COMPONENTS	1. DIMENSIONS	MA	MEASURE MENT	100%		MFG. DRG.	MFG. DRG.	LOG BOOK INSPN REPORT	✓	P	-	-	
		2. SURFACE & SUB-SURFACE DEFECTS	CR	PT (MACHINED AREA OF BODY & COVER DISC)	100%	100%	ASTM E-165	NO DEFECTS		✓	P	V	V	

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. CAT.	
								FOR NTPC USE REVIEWED BY APPROVED BY APPROVAL SEAL	

FORMAT NO.: QS-01-QAI-I-09/FI-RI



MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT : 2X600 MW ADILABAD SCCL TPP							
ITEM : STAINLESS STEEL NON RETURN VALVES SIZE 40 NB/ CL. 800		QF NO.: PE-QF-381-100-M004 REV. NO.: 00 DATE: 17.09.2012		PACKAGE : MAIN PLANT -- LP PIPING VALVES CONTRACT NO. : MAIN-SUPPLIER: BHEL, PEM NOIDA		SUB-SYSTEM: EQUIPMENT COOLING WATER SYSTEM							
PAGE: ...2. OF...3		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"		FOR NTPC USE		DOC. NO.: REV..... CAT.....							
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	7.	8.	9.	10.	11.		
2.3	DISC. AND BODY SEAT RING	1. LAPPING	CR	BLUE MATCHING	100%	100%	UNIFORM METAL TO METAL CONTACT	TEST CERT.	✓	P	V	V	
3.0	ASSEMBLY	1. DIMENSIONS	MA	MEASURE MENT	100%	100%	APPD. DRG. / TECH. SPEC.	APPD. DRG. / TECH. SPEC.	INSPE. REPORT	✓	P	V	-
4.0	TESTING BODY	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	10%	APPD. DRG. / TECH. SPEC.	NO LEAKAGE	TEST CERT.	✓	P	W	W
4.2	SEAT	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	10%	-DO-	LEAKAGE PERMISSIBLE AS PER ISO 15761	-DO-	✓	P	W	W
4.3	COMPLETE VALVE	PERFORMANCE	CR	SPECIFIED PRESSURE 2. AT 25% OF SEAT TEST PRESSURE OPERATION OF FLAP/DISC	100%	10%	TECH. SPEC.	SMOOTH OPENING/ CLOSING OF FLAP/DISC	INSPE. REPORT	✓	P	W	W
5.0	END CONNECTION DETAILS	1. DIMENSIONS	MA	MEASUREM NT/VISUAL	100%	100%	APPD. DRG.	APPD. DRG.	-DO-	✓	P	W	W
6.0	PACKING	1. AS PER BHEL TECH. SPEC. NAME PLATE WITH VALVE TAG NOS.	MA	VISUAL	100%	100%	-DO-	-DO-	T.C.		P	V	-

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



ENGG. DIV./QA&I

MFGR.'s LOGO		MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT : 2X600 MW ADILABAD SCCL TPP PACKAGE : MAIN PLANT - LP PIPING VALVES CONTRACT NO. : MAIN-SUPPLIER: BHEL, PEM NOIDA			
				ITEM : STAINLESS STEEL NON RETURN VALVES SIZE 40 NB/ CL. 800 SUB-SYSTEM: EQUIPMENT COOLING WATER SYSTEM QP NO.: PE-QP-381-100-M004 REV.NO.: 00 DATE: 17.09.2012 PAGE: ...3. OF...3							
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK M C / N	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY M C N		REMARKS
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	** 10.	11.

ABBREVIATIONS
 CR = CRITICAL CHARACTERISTIC
 MA = MAJOR CHARACTERISTIC

PT = PENETRANT TEST


NOTES:-

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


MANUFACTURER/ SUB-SUPPLIER		MAIN-SUPPLIER		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"		FOR NTPC USE		DOC. NO.:		REV. CAT.	
SIGNATURE						REVIEWED BY		APPROVED BY		APPROVAL SEAL	

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

SECTION-D2 ACTUATORS DATA SHEET - A2 WIRING DIAGRAM

		TECHNICAL SPECIFICATION STEEL GATE, GLOBE & NON RETURN VALVES 2X600 MW ADILABAD SCCL TPP	
SPECIFICATION NO. PE-TS-999-100-M001		VOLUME : IIB	
SECTION : D		REV. NO.: 00	
DATE: 17.09.2012		SHEET 1 OF 1	

NTPC DRAWING NO.		THE SINGARENI COLLIERIES COMPANY LTD.		POWER PROJECT DIVISION (A Government Company)		CONSULTANT NTPC Limited (A Government of India Enterprise) CONSULTING WING		PROJECT : SCCL COAL BASED THERMAL POWER PLANT (2 x 600 MW)		BOILER TURBINE-GENERATOR PACKAGE		BHARAT HEAVY ELECTRICALS LTD. POWER SECTOR PROJECTS ENGINEERING MANAGEMENT NEW DELHI		MOTOR OPERATED VALVE ACTUATOR DATA SHEET	
DATE		SCALE		DEPT.		SIGN		DATE		SHEET 1 OF 5		REV. 00		PE-ID-381-145-1902	
SIGN		SCALE		DEPT.		SIGN		DATE		SHEET 1 OF 5		REV. 00		PE-ID-381-145-1902	

		SPECIFICATION SHEET FOR MOTORISED VALVE ACTUATOR 2 x 600MW SINGARENI - SCCL TPP		SHEET 2 OF 5	TAG No :-Nos.....	Data Sheet A & B	
				REV. NO. 00 DATE: 13.04.12	DATA SHEET-A (TO BE FILLED BY PURCHASER)	DATA SHEET-B (TO BE FILLED-UP BY BIDDER)	
GENERAL*							
* PROJECT		2 x 600MW SINGARENI - SCCL TPP					
* OFFER REFERENCE							
* TAG NO. SERVICE							
* DUTY		□ ON / OFF □ INCHING					
* LINE SIZE (inlet/outlet): MATERIAL		□ GLOBE □ GATE □ REG. GLOBE □ BUTTERFLY					
* VALVE TYPE							
* OPENING / CLOSING TIME	 SECONDS					
* WORKING PRESSURE	 KG/SQ.CM.					
* AMBIENT CONDITIONS		HALL BE SUITABLE FOR CONTINUOUS OPERATION UNDER AN AMBIENT TEMP. OF 0-55 DEG C AND RELATIVE HUMIDITY OF 0-95%					
* VALVE SEAT TEST PRESS		BIDDER TO SPECIFY					
* REQUIRED VALVE TORQUE		BIDDER TO SPECIFY					
* ACTUATOR RATED TORQUE		BIDDER TO SPECIFY					
* CONSTRUCTION		TOTALLY ENCLOSED, WEATHER PROOF, IP-55 TO BE PROVIDED FOR 0-100% TRAVEL DOUBLE SHIELDED, GREASE LUBRICATED ANTI- FRICTION.					
* BEARINGS							
* GEAR TRAIN FOR LIMIT SW/TCH/TORQUE SWITCH OPERATION		METAL (NOT FIBRE GEARS). SELF-LOCKING TO PREVENT DRIFT UNDER TORQUE SWITCH SPRING PRESSURE WHEN MOTOR IS DE-ENERGIZED.					
* SIZING		OPEN/CLOSE AT RATED SPEED AGAINST DESIGNED DIFFERENTIAL PRESSURE AT 90 % OF RATED VOLTAGE. FOR ISOLATING SERVICE THREE SUCCESSIVE OPEN-CLOSE OPERATIONS OR 15 MINS. WHICHEVER IS HIGHER. For regulating service 150 starts/hr min.					
* REQUIRED		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					
* ORIENTATION		<input type="checkbox"/> TOP MOUNTED <input type="checkbox"/> SIDE MOUNTED					
* TO DISENGAGE AUTOMATICALLY DURING MOTOR OPERATION.							
HANDWHEEL							
ELECTRIC		ACTUATOR MAKE/MODEL BIDDER TO SPECIFY					
MOTOR MAKE / MODEL / TYPE / RATING (KW)		BIDDER TO SPECIFY					
MOTOR TYPE		SQUIRREL CAGE INDUCTION MOTOR, STARTING CURRENT LIMITED TO SIX TIMES THE RATED CURRENT.					
ACTUATOR WIRING DIAGRAM & No.		<input checked="" type="checkbox"/> BIDDER TO ENCLOSE <input type="checkbox"/> ENCLOSED					
COLOUR SHADE		<input checked="" type="checkbox"/> BLUE (RAL 5012) ENAMEL/ GREY ENAMEL <input type="checkbox"/> PAINT (SHADE 631 AS PER IS 5) OR EQUIVALENT					
SHAFT RPM		BIDDER TO SPECIFY					
OUR SET VALUE		BIDDER TO SPECIFY					
STARTING / FULL LOAD CURRENT		BIDDER TO SPECIFY					
NO. OF REV FOR FULL TRAVEL		BIDDER TO SPECIFY					
* PWR SUPP TO MTR / STARTER		415V±10%, 3PH, AC, 50Hz±5%, 10%(ABSOLUTE) COMBINED VOLTAGE & FREQUENCY VARIATION 118V AC. TO BE DERIVED FROM THE POWER SUPPLY TO THE STARTER					
* CONTROL VOLTAGE REQUIREMENT		<input type="checkbox"/> IP 65 <input checked="" type="checkbox"/> IP 67 FOR OUTDOOR □ FLAME PROOF <input checked="" type="checkbox"/> IP 65 FOR INDOOR, TOTALLY ENCL. SELF VENTILATED.					
* ENCLOSURE CLASS OF MOTOR							



TAG No :-

Qty :-Nos.....

Data Sheet A & B

**SPECIFICATION SHEET FOR
MOTORISED VALVE ACTUATOR
2 x 600MW SINGARENI - SCCL TPP**

SPECIFICATION NO.: PE-ID-381-145-1902

VOLUME

SECTION

REV. NO. 00

DATE: 13.04.12

SHEET 2

OF

5

DATA SHEET-A

(TO BE FILLED BY PURCHASER)

DATA SHEET-B

(TO BE FILLED-UP BY BIDDER)

INTERPOSING RELAY (Applicable for Integral Starter)	INTERPOSING RELAY	<input type="checkbox"/> 2 NOS.	<input type="checkbox"/> 3 NOS.	
	INTERPOSING RELAY (QUANTITY)	<input type="checkbox"/> 2 NOS.	<input type="checkbox"/> 3 NOS.	
RELAY (Applicable for Integral Starter)	DRIVING VOLTAGE	<input type="checkbox"/> 20.5 - 24V DC	<input type="checkbox"/> V DC	
	DRIVING CURRENT	<input type="checkbox"/> 125 mA MAX	<input type="checkbox"/> mA MAX	
TORQUE SWITCH (Not Applicable for Smart Actuator)	LOAD RESISTANCE	<input type="checkbox"/> > 192 ohms - < 25 K ohms	<input type="checkbox"/> ohms	
	MECHANICAL LATCHING DEVICE	<input type="checkbox"/> REQUIRED (REFER NOTE-6)		
(Not Applicable for Smart Actuator)	MFR & MODEL NO.	BIDDER TO SPECIFY		
	OPEN / CLOSE	<input type="checkbox"/> 1 No. / <input type="checkbox"/> 2 Nos. / <input type="checkbox"/> 1 No. / <input type="checkbox"/> 2 Nos.		
LIMIT SWITCH (Not Applicable for Smart Actuator)	ACCURACY	+3% OF SET VALUE		
	MFR & MODEL NO.	BIDDER TO SPECIFY		
OPEN : INT : CLOSE	2 NOS. (ADJ.)	<input type="checkbox"/> 1 No. / <input type="checkbox"/> 2 Nos.		
	1 No.	<input type="checkbox"/> 1 No. / <input type="checkbox"/> 2 Nos.		



**SPECIFICATION SHEET FOR
MOTORISED VALVE ACTUATOR
2 x 600MW SINGARENI - SCCL TPP**

TAG No :-

Qty :-Nos.....

Data Sheet A & B

DATA SHEET-A
(TO BE FILLED BY PURCHASER)DATA SHEET-B
(TO BE FILLED-UP BY BIDDER)

SPECIFICATION NO.: PE-ID-381-145-1902	VOLUME	
	SECTION	
	REV. NO.	00
	DATE: 13.04.12	5

CONTACT TYPE	2 NO + 2 NC	
RATING (AC/DC)	5A, 240 V AC / 0.5A, 220 V DC	
ENCLOSURE CLASS	IP 55	
POSITION TRANSMITTER	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	
MFR & MODEL NO.	BIDDER TO SPECIFY	
TYPE	<input checked="" type="checkbox"/> ELECTRONIC (2-WIRE) CONTACTLESS <input type="checkbox"/> ELECTRONIC (2-WIRE) RA CONVERTER	
SUPPLY	<input checked="" type="checkbox"/> 24V DC <input type="checkbox"/>	
OUTPUT	<input checked="" type="checkbox"/> 4-20mA <input type="checkbox"/>	
ACCURACY	± 1% FS	
ENCLOSURE CLASS	IP 55	
MOTOR TERMINAL BOX	REQUIRED	
ACTUATOR TERMINAL BOX	REQUIRED	
ENCL CLASS MTR T.B. / ACTUATOR T.B.	<input type="checkbox"/> IP65 <input checked="" type="checkbox"/> IP67 <input type="checkbox"/> IP65 <input checked="" type="checkbox"/> IP67	
@ EARTHING TERMINAL	PROVIDED	
PUG & SOCKET (9 PIN) (FOR COMMAND, LST'S FEED BACK, Pot)	<input checked="" type="checkbox"/> 2 NOS. <input type="checkbox"/> NOT REQUIRED	
@ POWER CABLE GLAND	SIZE:	
@ SPACE HEATER CABLE GLAND	SIZE:	
OTHER CONTROL CABLE GLANDS	QUANTITY & SIZE: TWO (SIZE TO BE FURNISHED LATER)	
SPACE	REQUIRED	
HEATER	REQUIRED	
@ POWER SUPPLY		
@ RATING		
TOTAL WEIGHT (ACTUATOR + ACCESSORIES)		
BIDDER TO SPECIFY		Kg.

NOTES:

- SCOPE: DESIGN, MANUFACTURE, INSPECTION, TESTING AND DELIVERY TO SITE OF ELECTRIC ACTUATOR FOR INCHING OR OPEN / CLOSE DUTY.
- CODES & STANDARDS: DESIGN AND MATERIALS USED SHALL COMPLY WITH THE RELEVANT LATEST NATIONAL AND INTERNATIONAL STANDARD, AS A MINIMUM. THE FOLLOWING STANDARDS SHALL BE COMPLIED WITH: IS-9334, IS-2147, IS-2148, IS-325, IS-2959, IS-4691 AND IS-4722
- TEMPERATURE RISE SHALL BE RESTRICTED TO 70 DEG. C FOR AMBIENT TEMPERATURE OF 50 DEG C.
- CABLE GLANDS OF DOUBLE COMPRESSION TYPE BRASS MATERIAL SHALL BE PROVIDED.
- THE MAKE OF THE MOTOR WILL BE ANY OF THE FOLLOWING: CCL / SIEMENS / ABB / NGEF / BHARAT BIJLI / KIRLOSKAR
- THE TORQUE SWITCHES SHALL BE PROVIDED WITH MECHANICAL LATCHING DEVICE TO PREVENT OPERATION WHEN UNSEATING FROM THE END POSITIONS. THE LATCHING DEVICE SHALL UNLATCH AS SOON AS THE VALVE LEAVES THE END POSITION. IF SUCH PROVISION IS NOT POSSIBLE, THE TORQUE SWITCHES SHALL BE BYPASSED BY END-POSITION LIMIT SWITCHES WHICH OPENS ON VALVE LEAVING END POSITION. THESE LIMIT SWITCHES ARE ADDITIONAL TO THE NUMBER OF LIMIT SWITCHES SPECIFIED ELSEWHERE.
- THE MOTOR SHALL OPERATE SATISFACTORILY UNDER THE +/- 10% SUPPLY VOLTAGE VARIATION AT RATED FREQUENCY, -5% TO +3% VARIATION IN FREQUENCY AT RATED SUPPLY VOLTAGE. SIMULTANEOUS VARIATION IN VOLTAGE & FREQUENCY THE SUM OF ABSOLUTE PERCENTAGE NOT EXCEEDING 10%.
- THE MOTOR SHALL BE SUITABLE FOR DIRECT ON LINE STARTING.

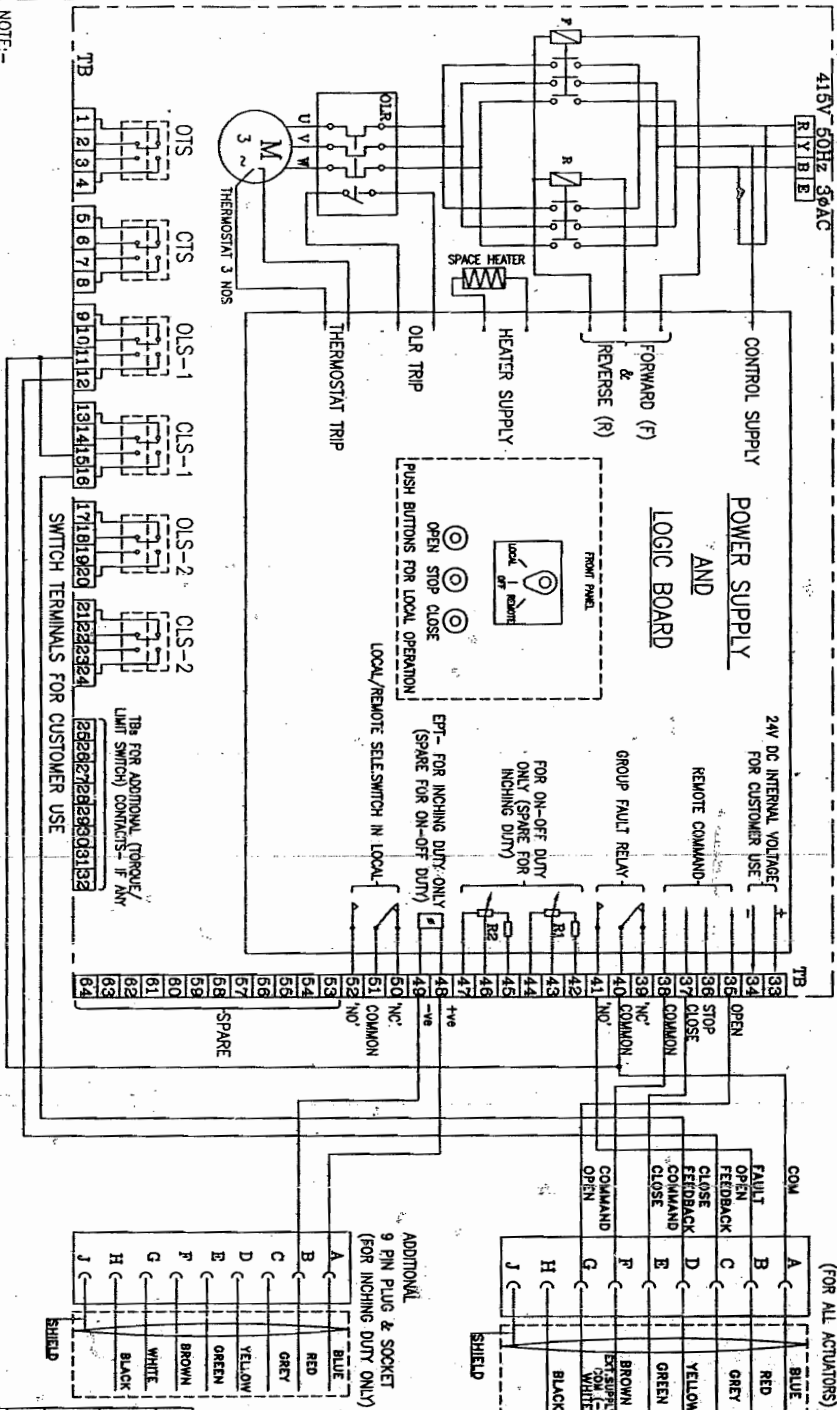
NAME	PREPARED BY	MS	DATE	13.04.2012
	CHECKED BY	MK		13.04.2012
	APPROVED BY	SHB		13.04.2012
	SIGNATURE			
DATE				

NOTES* = TO BE FILLED BY MPL (LEAD AGENCY). @ = TO BE FILLED BY ES

COMPANY SEAL

28272-CSIM-A-2 ON DRAWING

ALL DIMENSIONS ARE IN MILLIMETRES. FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT GCP / QP.



CONTACT DEVELOPMENT DIAGRAM

CONTACT	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-24
OTS	OPEN AT OVER TORQUE DURING OPENING TRAVEL	CLOSE AT OVER TORQUE DURING OPENING TRAVEL	OPEN AT OVER TORQUE DURING CLOSING TRAVEL	CLOSE AT OVER TORQUE DURING CLOSING TRAVEL								
CTS												
OLS-1												
OLS-2												
CLS-1												
CLS-2												
CLS-3												
CLS-4												
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CLS-13												
CLS-14												
CLS-15												
CLS-16												
CLS-17												
CLS-18												
CLS-19												
CLS-20												
CLS-21												
CLS-22												
CLS-23												
CLS-24												

INDICATES CONTACT CLOSED
INDICATES CONTACT OPEN
CONTACT RATING: 5A AT 250V AC & 0.5A AT 220V DC

SETTING PROCEDURE OF POSITION LIMIT AND TORQUE SWITCH

VALVES	OPEN	CLOSE
MAIN	BACK UP	MAIN
OTS	OTS	CLS
CLS	CLS	OTS

ALL OTHER GATE & GLOBE VALVES
CLS NOT TO BE CONNECTED IN TRIP CIRCUIT
BYPASS OTS FOR INTNL. 5% OF TRAVEL (FOR GATE VALVES ONLY)

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT
ELECTRICAL VALVE ACTUATORS (AC) WITH INTEGRAL STARTERS
FOR NTPC PROJECTS
(DRAWN FOR INTERMEDIATE POSITION OF VALVES)


BHARAT HEAVY ELECTRICALS LTD.
UNIT: HIGH PRESSURE BOILER PLANT
TRICHUR-69014

DEPT: VI
SCALE: NTS
WIRING DIAGRAM (TERMINAL PLAN)
FOR ACTUATOR WITH INTEGRAL STARTER WITH PLUG & SOCKET
FOR NTPC PROJECTS

CARD CODE
DRAWING NO.
3-V-MISC-24283
REV 0

- NOTE:-
- ALL TORQUE AND LIMIT SWITCHES (OTS, CTS, OLS1&2, CLS1&2) ARE WITH 2NO+2NC CONTACTS. 'NO+1NC' IS TERMINATED IN TBS 1-24, REMAINING CONTACTS ARE FOR INTERNAL USE.
 - ANY SPARE CONTACTS WHICH ARE NOT USED INTERNALLY ARE TO BE TERMINATED IN TBS 25-32
 - CTS - TORQUE SWITCHES FOR CW ROTATION (CLOSE)
 - OTS - TORQUE SWITCHES FOR CCW ROTATION (OPEN)
 - OLS-1, OLS-2 - LIMITSWITCHES FOR POSITION OPEN
 - CLS-1, CLS-2 - LIMITSWITCHES FOR POSITION CLOSE
 - EPT - ELECTRONIC POSITION TRANSMITTER (CONTACTLESS TYPE, FOR INCHING DUTY)
 - R1-R2-POTENTIOMETER 2 x 100 OHMS (FOR ON-OFF DUTY)
 - FOR COMMANDS & EPT EITHER INTERNALLY GENERATED 24 VDC OR EXTERNAL SUPPLY OF 24VDC CAN BE USED
 - M - MOTOR 3Φ 415V 50 Hz AC SUPPLY
 - TORQUE SWITCH BYPASS WITH LIMITSWITCH BOTH ON OPEN & CLOSE DIRECTION TO BE DONE INTERNALLY.

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

			
TECHNICAL SPECIFICATION STEEL GATE, GLOBE AND NON RETURN VALVES 2X600 MW ADILABAD SCL TPP			
SPECIFICATION NO. PE-TS-999-100-M001	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 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 Torque calculations of actuator selected.
- 1.4 Actuator data sheet with Wiring Diagram.
- 1.5 Quality Plan duly signed & stamped with bidder's seal.

- 2.0 The following shall be submitted within the stipulated time period as per vendor's drawings/documents schedule, 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.

2X600 MW ADILABAD SCCL TPP

VOLUME - III

TECHNICAL SCHEDULES

FOR

STEEL GATE/GLOBE/NON RETURN VALVES


SPECIFICATION NO. PE-TS-999-100-M001



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

CONTENTS

SL.NO	TITLE
1	COMPLIANCE SHEET
2	SCHEDULE OF DEVIATIONS
3	SCHEDULE OF DECLARATIONS
4	SCHEDULE OF PRICES

		STEEL GATE/GLOBE/NON RETURN VALVES 2X600 MW ADILABAD SCCL TPP	
SPECIFICATION NO. PE-TS-999-100-M001		VOLUME : III	
SECTION:		REV. NO.: 00	
DATE: 17.09.2012		SHEET 1 OF 1	

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

1.	Technical requirements as per Data sheet-A & Standard	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



TITLE
*** SCHEDULE OF DEVIATIONS**
() From Technical Specifications (Volume - II B)

SPECIFICATION NO
PE-TS-999-100-M001

VOL III

SHEET OF

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

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE


NAME

DESIGNATION

SIGNATURE

DATE

COMPANY SEAL

		TITLE *SCHEDULE OF DECLARATIONS
SPECIFICATION NO PE-TS-999-100-M001		
VOL III		
SHEET OF		

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

DECLARATION

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

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

Bidder's Company Name

.....

Authorised representative's
Signature

.....

Name

.....

Bidder's Name

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

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



PRICE SCHEDULE
(MAIN VALVES WITHOUT COMMISSIONING SPARES)
STEEL GATE/ GLOBE/ NON RETURN VALVES
2X600 MW ADILABAD SCCL TPP

SPECIFICATION NO. PE-19-JET-105-M01
VOL. B
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
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN PRESSURE KG/CM2(G) TEMP (DEG °C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL ***	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN	MAIN VALVES QTY WITHOUT COMMISSIONING SPARES	UNIT PRICE
1	ECW-180 TO ECW-184 (EACH 2 NOS)	GLV	25	MAN	12 60	ECW SYSTEM	#800 OF BSEN ISO 15761	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	AS PER ASME B16.11	—	33.4 3.38	10	
2	ECW-108 (2 NOS), ECW-110 (2 NOS), ECW-112 TO ECW-114 (EACH 2 NOS)	GLV	40	MAN	12 60	ECW SYSTEM	#800 OF BSEN ISO 15761	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	—	48.26 3.68	10	
3	ECW-101 (2 NOS), ECW-103 (2 NOS)	GLV	50	MAN	12 60	ECW SYSTEM	#800 OF BSEN ISO 15761	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	—	60.3 3.81	4	
4	ECW-100 (2 NOS), ECW-100 (2 NOS)	GLV	50	MO	12 60	ECW SYSTEM	#800 OF BSEN ISO 15761	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	MOTORIZED ELECTRIC ACTUATOR WITH INTEGRAL STARTERS OT=40 - 60 SECS	60.3 3.81	4	
5	ECW-109 (2 NOS), ECW-111 (2 NOS)	NRV	40	AUTO	12 60	ECW SYSTEM	#800 OF BSEN ISO 15761	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	—	48.26 3.68	4	

NOTES
1. LEGENDS: MAN/MANUAL, MO/MOTORIZED, GV-GATE VALVE, GL-GLOBE VALVE, NRV-NON RETURN VALVE
2. COMMISSIONING SPARES: ONE SET OF GLAND PACKING & 1 NO. BONNET GASKET FOR EACH GATE VALVE, ONE NO OF COVER GASKET FOR SWING CHECK NON RETURN VALVE
3. MANDATORY SPARES: 3% ON MTR 2 NOS
4. Bidders are required to quote and price of each item under commissioning spares separately & individually i.e. price of all commissioning spares shall not be clubbed/ included in the unit price of main valves.
5. Bidders are required to quote and price of each item under commissioning spares separately & individually i.e. price of all commissioning spares shall not be clubbed/ included in the unit price of main valves.
6. Bidders 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 spares 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
(COMMISSIONING SPARES)
STEEL GATE/GLOBE/ NON RETURN VALVES
2X800 MM ADILABAD 3CCL TPP

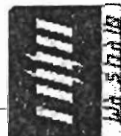
SPECIFICATION NO. PETS-381-10A-M001
VOL II
SECTION
REV. NO. 00 DATE: 11/09/2012
SHEET 1 OF 3

Prices to be quoted in this format only

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN PRESSURE KG/CM2(G) TEMP (DEG °C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL***	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN	COMMISSIONING SPARES SETS.	UNIT PRICE
1	ECW-180 TO ECW-184 (EACH 2 NOS)	GLV	25	MAN	12	60	ECW SYSTEM	#800 OF BSEN ISO 15791 ASTM A 182 GR. F 304	ASTM A 182 GR. F316 ASTM A 182 GR. F316	SOCKET WELDED AS PER ASME B16.11		33.4	3.38	10
2	ECW-108 (2 NOS), ECW-110 (2 NOS), ECW-112 (2 NOS), ECW-114 (EACH 2 NOS)	GLV	40	MAN	12	60	ECW SYSTEM	#800 OF BSEN ISO 15791 ASTM A 182 GR. F 304	ASTM A 182 GR. F 316 ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		48.26	3.68	10
3	ECW-101 (2 NOS), ECW-103 (2 NOS)	GLV	50	MAN	12	60	ECW SYSTEM	#800 OF BSEN ISO 15791 ASTM A 182 GR. F 304	ASTM A 182 GR. F 316 ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		60.3	3.91	4
4	ECW-100 (2 NOS), ECW-100 (2 NOS)	GLV	50	MO	12	60	ECW SYSTEM	#800 OF BSEN ISO 15791 ASTM A 182 GR. F 304	ASTM A 182 GR. F 316 ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	MOTORIZED ELECTRIC ACTUATOR WITH INTEGRAL STARTERS OT=40 - 60 SECS	60.3	3.91	4
5	ECW-108 (2 NOS), ECW-111 (2 NOS)	NRV	40	AUTO	12	60	ECW SYSTEM	#800 OF BSEN ISO 15791 ASTM A 182 GR. F 304	ASTM A 182 GR. F 316 ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		48.26	3.68	4

- NOTES:
- LEGENDS: MAN-MANUAL, MO-MOTORIZED, GL-GLOBE VALVE, NRV-NON RETURN VALVE, 2-COMMISSIONING SPARES, ONE SET OF GLAND PACKING & 1 NO BONNET GASKET FOR EACH GATE VALVE, ONE NO OF COVER GASKET FOR BWM CHECK NON RETURN VALVE & ONE ACTUATOR FOR RINS AND SEAL.
 - FOR MOTOR OPERATED VALVES
 - MANDATORY SPARES ARE EXCLUSIVE of cost of Commissioning Spares price.
 - Material specification is as per IS specification.
 - 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 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 spares 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 SPARES
COMPLETE VALVES WITH ACTUATOR ASSEMBLY WITHOUT
COMMISSIONING SPARES)
STEEL GATE/GLOBE/ NON RETURN VALVES
2X600 MM ADILABAD SCLL TPP

SPECIFICATION NO. PE/TA/341/100-M/01
VOL II
SECTION
REV NO./00 DATE: 17.02.2012
SHEET 3 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
SL NO.	TAG NOS.	TYPE OF VALVE	SIZE mm (NB)	OPERATION	DESIGN PRESSURE KG/CM2(G) TEMP (DEG °C)	SERVICE	RATING, DESIGN & TESTING CODE	BODY, BONNET & DISC MATERIAL	BODY & DISC SEAT AND OTHER TRIM MATERIAL***	END CONN	SPECIAL FEATURES	MATCHING PIPE OD X THKN	MANDATORY SPARES COMPLETE VALVES WITH ACTUATOR ASSEMBLY WITHOUT COMMISSIONING SPARES NOS.	UNIT PRICE
1	ECW-100 (2 NOS), ECW-101 (2 NOS)	GLV	25	MAN	12 60	ECW SYSTEM	#800 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		33.4 3.38	2	
2	ECW-108 (2 NOS), ECW-110 (2 NOS), ECW-112 TO ECW- 114 (EACH 2 NOS)	GLV	40	MAN	12 60	ECW SYSTEM	#800 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		48.26 3.68	2	
3	ECW-101 (2 NOS), ECW-103 (2 NOS)	GLV	50	MAN	12 60	ECW SYSTEM	#800 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		60.3 3.91	2	
4	ECW-100 (2 NOS), ECW-100 (2 NOS)	GLV	50	MO	12 60	ECW SYSTEM	#800 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11	MOTORIZED ELECTRIC ACTUATOR WITH INTEGRAL STARTERS OT=40 - 60 SECS	60.3 3.91	2	
5	ECW-100 (2 NOS), ECW-111 (2 NOS)	NRV	40	AUTO	12 60	ECW SYSTEM	#800 OF BSEN ISO 15781	ASTM A 182 GR. F 304	ASTM A 182 GR. F 316	SOCKET WELDED AS PER ASME B16.11		48.26 3.68	2	

NOTES
1. LEGENDS: MAN-MANUAL, MO-MOTORIZED, SV-GATE VALVE, GL-GLOBE VALVE, NRV-NON RETURN VALVE
2. COMMISSIONING SPARES: ONE SET OF BLIND PACKING & 1 NO. BONNET GASKET FOR EACH GATE VALVE, ONE NO OF COVER GASKET FOR SWING CHECK NON RETURN VALVE
3. Motorized electric actuator with integral starters OT=40 - 60 SECS
4. Main valve prices shall BE EXCLUSIVE of cost of Commissioning spares prices.
5. 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 included in the unit price of Main valves.
6. 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 spares 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