

	TITLE: 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

2 X 660MW MOUDA STPP

VOLUME – IIB

TECHNICAL SPECIFICATION


FOR

SPRING LOADED BYPASS VALVES

SPECIFICATION NO. PE-TS-387-100-M009




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

	TECHNICAL SPECIFICATION SPRING LOADED BYPASS VALVES 2 X 660MW MOUDA STPP		SPECIFICATION NO. PE-TS-387-100-M009
			VOLUME : IIB
			SECTION:
			REV. NO.: 00 DATE: 22.01.2013
	SHEET 1 OF 1		


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	TECHNICAL SPECIFICATION SPRING LOADED BYPASS VALVES 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
		VOLUME : IIB	
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SECTION-A

SCOPE OF ENQUIRY

	TECHNICAL SPECIFICATION SPRING LOADED BYPASS VALVES 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
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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 Spring loaded bypass valve complete with all accessories as per the requirements mentioned in different sections of the specification for 2 X 660MW MOUDA STPP.


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 Spring loaded bypass valve shall not relieve the bidder of the responsibility of providing such facilities to complete the supply of Spring loaded bypass valve 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 SPRING LOADED BYPASS VALVES 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
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PROJECT INFORMATION


The bidder shall acquaint himself by a visit to the site, if felt necessary, with the conditions prevailing at site before submission of the bid. The information provided in this section will be for general guidance and shall not be contractually bidding on BHEL/OWNER. All relevant site data/information as may be necessary shall have to be obtained/ collected by the bidder.

The plant site is located in Mouda Tehsil, district Nagpur of Maharashtra State, having latitude and longitude of 20°10'50" N and 79°23'52" E respectively. The site is bounded by villages Kumbhari on North, Lapka & Mouda on South, Koradi on East & Rahli on West and is at a distance of about 4 Kms from Mouda town and approachable from NH-6. Nearest railway station is Chacker, 8 Kms away from the site on Nagpur – Kolkata Broad Gauge (BG) section of South Eastern Railway (main line). The nearest commercial airport is at Nagpur located at a distance of approximately 42 Kms from the project site.

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SECTION-C

SPECIFIC TECHNICAL REQUIREMENTS

	SPECIFIC TECHNICAL REQUIREMENTS SPRING LOADED BYPASS VALVES 2 X 660MW MOUDA STPP		SPECIFICATION NO. PE-TS-387-100-M009
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1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the standard technical specification and Data sheet A of Section D. In addition, the requirements of this Section-C shall also be complied with. However, wherever the details given in standard technical specification of Section-D and Data sheet A are different, the requirements of Data sheet A shall prevail. Similarly in the event of contradictions between Section –C & Section –D/ Data sheet A, Section –C will prevail.
- 1.2 The technical requirements for valves shall, in general, be as per the attached standard Technical specification for Valves and Data sheet A of Vol. II B Section D.

2. SCOPE OF SUPPLY

- 2.1 The valves complete with all accessories shall be supplied as per Data sheet A of Section D. For detail refer the same. Each valve (quantity and other details specified in Data Sheet-A) shall be complete with the following accessories.
 - i) Lifting arrangement provision for handling i.e., lifting lugs, eye bolts etc.
- 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:


Erection & Commissioning at site are excluded from the bidder's scope.

4 QUALITY ASSURANCE

The Quality Plans enclosed with this specification specify minimum quality control requirement. During contract stage vendor shall furnish these Quality Plans duly signed & stamped for their compliance. Quality plans shall be approved by BHEL and customer (If necessary). All inspection and testing shall be carried out by BHEL and CUSTOMER (if necessary). In case inspection is by both BHEL and CUSTOMER, then the inspection can be carried out jointly or separately, which will be informed later.

5 PAINTING REQUIREMENT:

Surface preparation shall be as per SSPC-SP-3/ Power Tool Cleaning followed by two coats of Heat Resistance Aluminium paint to IS 13183 Gr. I or equivalent, paint shade Aluminium and total DFT of paint will be equal to 80 microns minimum.

	SPECIFICATION NO. PE-TS-387-100-M009	
	SECTION C	
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**SPECIFIC TECHNICAL REQUIREMENTS
SPRING LOADED BYPASS VALVES
2 X 660MW MOUDA STPP**

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 has to be dispatched in total assembled form.
- c) Body ends shall be suitably sealed to protect them against damage during transit and storage.
- d) Valves with butt-welding ends shall be protected by means of polythene caps/rubber end protectors to prevent damage to ends & also to avoid foreign material entering the valve during shipment & storage.
- e) Valve Tag Nos. shall be incorporated in all the dispatch documents.
- f) Proper care shall be taken to avoid damage to the painted surface during transit.
- g) 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.
- h) Spare parts shall be packed separately and clearly marked. Spares shall also be suitably packed for transit and long storage period at site.

7 SPARES


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

8 DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents (enclosed in Vol III) duly filled, signed and stamped along with the bid:


- a) Compliance sheet
- b) Schedule of Deviations if any.
- c) Schedules of Price & Unit Price for each 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.

	TECHNICAL SPECIFICATION SPRING LOADED BYPASS VALVES 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
		VOLUME : IIB	
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SECTION-D

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

	STANDARD TECHNICAL SPECIFICATION FOR SPRING LOADED BYPASS VALVES	SPECIFICATION NO. PE-SS-999-100-M009	
		VOLUME . II B	
		SECTION D	
		REV. NO. 02	DATE. 15.05.2012
		SHEET 1	OF 2

1.0 GENERAL

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

2.0 CODES AND STANDARDS:

- 2.1 The valves covered under this specification shall be of manufacturer's own proven design and shall be suitable for the required technical parameters mentioned in Data sheet A. However BS:759 and BS EN ISO 4126 shall be referred to wherever applicable.
- 2.2 In case of any conflict between the above Codes/Standards and this specification, the latter shall prevail and in case any further conflict in this matter, the interpretation of the specification by the Engineer shall be final & binding.

3.0 DESIGN REQUIREMENTS

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.

4.0 MATERIALS


- 4.1 The materials of construction of main parts of valves shall be specified in Data sheet-A.
- 4.2 The materials of construction of the remaining parts shall be as per relevant code/ standard governing the valves and to suit the service conditions. These materials shall be subject to approval of the purchaser.
- 4.3 Materials used in manufacture of valves shall be of tested quality.

5.0 CONSTRUCTION FEATURES:

- 5.1 All valves shall be globe type construction.
- 5.2 The seat and disc shall be easily removable and shall be suitable for easy relapping.
- 5.3 Valves shall have pressure seal bonnet / bolted bonnet construction and the adjusting screw shall be covered under a cap.
- 5.4 An arrow indicating the direction of flow shall be embossed on the body of the valves.
- 5.5 A metallic (stainless steel plate 2mm thick) nameplate shall be fitted on each valve. Nameplate inscription required for each valve shall be indicated at the contract stage. Inscriptions shall be engraved 1 mm deep filled with enamel paint.
- 5.6 Suitable lifting lugs and eye bolts shall be provided for valves of weight 500 Kg and above.

6.0 LUBRICATION:

- 6.1 Lubrication, if any, required for smooth and easy operation of valves shall be mentioned.
- 6.2 Choice of lubrication shall be based on ambient temperature condition of 50°C.

	STANDARD TECHNICAL SPECIFICATION FOR SPRING LOADED BYPASS VALVES	SPECIFICATION NO. PE-SS-999-100-M009	
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- 6.3 Type of lubricant to be used and its annual consumption (based on 100 operations per year) shall be indicated by the tenderer.

7.0 INSPECTION AND TESTS:

- 7.1 The items covered under this contract shall be subjected to inspection, testing and quality surveillance. The Inspection Agency shall, at all reasonable times have access to Vendor's works, Quality Control records and all facilities as reasonably required for carrying out the inspection and testing efficiently, and these shall be provided by the vendor free of cost
- 7.2 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 shall be submitted. The Independent Inspecting Authority proposed by the vendor shall be informed in the offer.
- 7.3 The minimum NDT/testing and inspection requirements for valve shall be as per the attached Quality Plan. However, in case of order, final inspection and testing shall be carried out as per the final approved quality plan without any price implications.
- 7.4 Body of all valves shall be hydraulically tested at 1.5 times the design pressure for leak tightness.

8.0 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.

9.0 CLEANING AND PROTECTION FOR DESPATCH

- 9.1 Suitable rust preventive shall be applied on machined exposed surfaces.
- 9.2 Valve ends shall be protected from external damage and sealed against the ingress of dirt by means of polythene caps/rubber end protectors.
- 9.3 Valve Tag Nos. shall also be incorporated in all the despatch documents.

	DATA SHEET-A SPRING LOADED BYPASS VALVE 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
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**REQUIREMENT OF SPRING LOADED BYPASS VALVE
BILL OF MATERIAL FOR MAIN & SPARES**

DESCRIPTION	QUANTITY (NOS.)			
SPRING LOADED BYPASS VALVE	MAIN VALVE(NOS.)	COMMISSIONING SPARES		MANDATORY SPARES (COMPLETE VALVE ASSEMBLY WITHOUT COMMISSIONING SPARES) (NOS.) (AS PER GROUP-C, CLAUSE 18, S. No. 15 OF MANDATORY SPARE LIST)
		BONNET GASKET (NOS.)	CAP GASKET (NOS.)	
FDV-42	2	2	2	2
FDV-43	2	2	2	

Sanjay
22/01/13

	DATA SHEET-A SPRING LOADED BYPASS VALVE 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
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Material of Construction

SNO	COMPONENT	MATERIALS
1	BODY, BONNET, CAP	ASTMA216GrWCC
2	STEM	ASTMA182 Gr F6a
3	SPRINGS	ALLOY STEEL
4	BODY SEAT	ASTMA 105 Hard Faced (Stellite or Equivalent)
5	BONNET BUSH & LOCK NUT, ADJUSTING SCREW	PHOSPHER BRONZE (ASTM B139 / BS1400)
6	BOTTOM & TOP SPRING PLATE	STAINLESS STEEL (BS970-420 / ASTM276-420)
7	BODY & CAP STUD	ASTMA193 Gr B7
8	BODY & CAP NUT	ASTMA 194 Gr 2H
9	BONNET & CAP GASKETS	SPIRAL WOUND GASKETS
10	VALVE HEAD	NICKLE CHROME ALLOY/ Seating Surface Hard Faced (Stellite or Equivalent)
11	VALVE GUIDE	NICKLE CHROME ALLOY

MANUFACTURER'S NAME AND ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT : 2 X 660MW MOUDA STPP				
MFR.'s LOGO		ITEM : SPRING LOADED BYPASS VALVE		QPNO.: PE-QP-999-139-M012		PACKAGE : 526✓				
LATER		SUB-SYSTEM: FEED WATER		REV. NO.: 00		CONTRACT NO.: 387				
				DATE: 22/01/2013		MAIN-SUPPLIER: BHEL PEM NOIDA				
MANUFACTURER'S NAME AND ADDRESS		SUB-SYSTEM: FEED WATER		PAGE: 2 OF 3						
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*	11.
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	11.
		3. SCRAGGING	CR	FULL DEFLECTION	100%	RELEVANT SPEC.	NO PERMANENT SET IN 10 CYCLES	-DO-	✓	V
		4. SURFACE DEFECTS	CR	PT/MPi	100%	ASTME 165/ASTME-709	NO DEFECTS	-DO-	✓	V
2.0	IN PROCESS									
2.1	MACHINING OF BODY, BONNET, CAP, DISC, BODY SEAT, SPINDLE, SPRING PLATE ETC.	1. DIMENSIONS 2 SURFACE FINISH 3. SURFACE DEFECTS	MA	MEASUREME NT VISUAL PT/MPi	100% 100% 100%	MFG DRG -DO- ASTME 165/ASTME 709	MFG DRG. -DO- ASTME 165/ASTME 709	INSPN. REPORT -DO- -DO-	✓ ✓ ✓	V V V
2.2	SS/STELLITE DEPOSIT ON DISC/BODY SEAT	WELD DEPOSIT	MA	VISUAL	100%	INTERNAL STANDARD	INTERNAL STANDARD	LOG BOOK	✓	V
2.3	DISC SEAT , BODY SEAT & VALVE GUIDE	1. HARDNESS 2. CONTACT PATTERN(SEATS) 3 SURFACE DEFECTS	MA	HARDNESS TEST BLUE MATCHING UT & PT	100% 100% 100%	APPROVED DRAWING/ TECHNICAL SPEC ASME B16.34	APPROVED UNIFORM METAL TO METAL CONTACT ASME B16.34	TEST CERT. -DO- -DO-	✓ ✓ ✓	V V V
2.4	SPINDLE	1. SURFACE DEFECTS 2. SUB SURFACE DEFECTS 3. HARDNESS	CR	PENETRANT TEST UT MEASUREMENT	100% 100% 100%	ASTME 165 ASME B16.34	NO DEFECT ASME B16.34	TEST CERT TEST CERT. INSPN. REPORT	✓ ✓ ✓	V V V
3.0	ASSEMBLY TESTING	1. DIMENSIONS	MA	MEASUREME NT	100%	APPROVED DRAWING	APPROVED DRAWING	INSPN. REPORT TEST	✓ ✓	W W

DOC. NO.:

FOR NTPC USE

REY..... CAT.....

REVIEWED BY

APPROVED BY

APPROVAL SEAL

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"

MANUFACTURER/ SUB-SUPPLIER

SIGNATURE

MAIN-SUPPLIER


SIGNATURE

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

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MANUFACTURER'S NAME AND ADDRESS			MANUFACTURING QUALITY PLAN				PROJECT : 2 X 660MW MOUDA STPP						
MFGCR.'s LOGO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLAS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY		REMARKS
					M	C/N			M	C	N		
			4.	5.	6.		7.	8.	9.	D*	10.		11.
		2. BODY LEAK TIGHTNESS	CR	HYDRAULIC	100%	100%	APPROVED DRG/.	NO LEAKAGE	✓		P/W	W	
		3. SEAT LEAK TIGHTNESS	CR	HYDRAULIC	100%	100%	-DO-	NO LEAKAGE	✓		P/W	W	
		4. SEAT LEAK TIGHTNESS	CR	AIR	100%	100%	-DO-	-DO-					
		5. PRESSURE SETTINGS AS PER APPD DRGS	CR	HYDRAULIC	100%	100%	SMOOTH OPERATION, VALVE TO OPEN AT SET PRESSURE	-DO-	✓		P/W	W	
4.0	END CONNECTION (FOR B.W. ENDS)	1. DIMENSIONS	MA	MEASUREME NT	100%	100%	APPROVED DRAWING/ TECHNICAL SPEC.	APPROVED DRAWING/ TECHNICAL SPEC.	INSPN. REPORT	✓	P/W	W	
		2. SURFACE DEFECTS	CR	PENETRANT TEST	100%	100%	ASTME 165	NO DEFECTS	TEST CERT.	✓	P/W	V	V
5.0	FINAL INSPECTION	CLEANLINESS AND COMPLETENESS	MA	VISUAL	100%	--	APPROVED DRAWING/ TECHNICAL SPEC.	APPROVED DRAWING/ TECHNICAL SPEC.	INSPN. REPORT		P/W	W	V
6.0	PAINTING	QUALITY AND THICKNESS OF PAINT	MA	VISUAL & MEASUREME NT	100%	100%	-DO-	-DO-	-DO-	✓	P/W	V	V
7.0	PACKING	AS PER TECHNICAL SPECIFICATION	MA	VISUAL	100%	100%	TECHNICAL SPEC.	TECHNICAL SPEC.	-DO-	✓	P/W	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'		 FOR NTPC USE	DOC. NO.:	REV. CAT.
			REVIEWED BY	APPROVED BY		APPROVAL SEAL	

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

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ENGG. DIV./QA&I

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22/01/13

	TECHNICAL SPECIFICATION SPRING LOADED BYPASS VALVE 2 X 660MW MOUDA STPP	SPECIFICATION NO. PE-TS-387-100-M009	
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DATA SHEET - C

Drawings/documents distribution schedule to be followed by the successful bidder:

1.0 The successful bidder shall submit the following drawings/documents within two weeks after award of contract.

- 1.1 Relevant drawings/leaflets for the valves showing following information.
 - i) Complete cross sectional arrangement of the valve.
 - ii) Binding dimensions, dismantling clearances & weights.
 - iii) Bill of material incorporating all the materials of construction of various parts along with BS/ASTM/IS standards to which the materials conform to.
 - iv) Special features, if any, as called for in the specific requirement
 - v) Type of oil/Grease wherever required and its annual consumption.
- 1.2 Relevant catalogue/leaflet of the actuators
- 1.3 Quality Plan duly signed & stamped with bidder's seal.
- 2.0 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.

BHEL PEM	DOCUMENT TITLE	DOCUMENT PE-DC-387-100-N307
	DATA SHEET FOR SPRING LOADED BYPASS VALVE ACROSS HP HEATERS	NUMBER
		REVISION 00 DATE 15/12/2012 NUMBER
	NTPC – 2 x 660 MW MOUDA STPP; TG PACKAGE	SHEET 1 OF 1

1.0 GENERAL DESCRIPTION

Two banks of HP Heaters of 50% capacity on feed water side are installed in the regenerative feed cycle i.e. HPH-6A/7A/8A & HPH 6B/7B/8B. Each heater bank is provided with motor operated gate valves at the inlet & outlet. The two (2) feed water bypass lines, of 50% capacity each, are provided across HP Heater banks with spring loaded bypass valve (SLBV) FDV-35 & FDV-36 for facilitating individual as well as both heater banks isolation due to any operational problem. Each SLBV is sized to pass 50% of BMCR feed water flow and works on differential pressure across the valve. Each SLBV has a staggered set pressure so that it acts as a back protection.

2.0 TECHNICAL REQUIREMENTS

1.	Quantity	:	2 nos. / unit, Tagged FDV-42 & FDV-43 (Total four nos. for two units).
2.	Type	:	Globe type spring loaded bypass valve.
3.	Size of valve	:	To be decided by bidder based on sizing data.
4.	a) End connection b) Connecting pipe size c) Connecting pipe material	:	Butt welded. OD 406.4 mm x 56 mm Thk. SA 106 GrC
5.	No. of Heater banks.	:	2 nos.
6.	Pressure drop across each heater bank.	:	4.5 kg/cm ² at 1200 T/Hr
7.	Operating conditions.	:	FDV-42: valve shall pass 1200 T/Hr of feed water at 193.6 °C & 310 kg/cm ² (a). Set pressure 4.8 kg/cm ² . Fully opens at 10% over pressure. FDV-43: valve shall pass 1200 T/Hr of feed water at 193.6 °C & 310 kg/cm ² (a). Set pressure 5.2 kg/cm ² . Fully opens at 10% over pressure.
8.	Set pressure range	:	Each valve shall be adjustable for opening when differential pressure settings are 4.5 to 5.5 kg/cm ² .
9.	Design pressure and temperature	:	350 kg/cm ² (a) and 310 °C
10.	Valve body Material	:	ASTM A216 WCC
11.	Regulatory requirement	:	IBR certificate in form IIIC

3.0 Testing, Mandatory spares and all other general requirements shall be as per contract.