


# **3X800 MW PATRATU STPP**

## **TECHNICAL SPECIFICATION FOR BALL VALVES**

**SPECIFICATION NO. PE-TS-020-100-M004  
REV. No.: 00**



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

	<b>TECHNICAL SPECIFICATION</b> <b>BALL VALVES</b> <b>3X800MW PATRATU STPP</b>	SPECIFICATION NO. PE-TS-020-100-M004
		REV. No.: 00
		DATE: 15.11.2022
		SHEET 1 OF 1


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	<b>TECHNICAL SPECIFICATION</b> <b>BALL VALVES</b> <b>3X800MW PATRATU STPP</b>	SPECIFICATION NO. PE-TS-020-100-M004	
		SECTION: I	
		REV. NO.: 00	DATE: 15.11.2022

**SECTION-I****SPECIFIC TECHNICAL REQUIREMENTS**

	<b>SPECIFIC TECHNICAL REQUIREMENTS FOR BALL VALVES</b>  <b>3X800MW PATRATU STPP</b>	SPECIFICATION NO: PE-TS-020-100-M004
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## 1. GENERAL

- 1.1 The valves shall meet the technical requirements and conform to the requirements of Section-I and Data sheet-A of Section-II. However, in the event of contradictions between Section-I & Section-II/Data Sheet-A, Data Sheet-A will prevail.
- 1.2 The technical requirements for valves shall, in general, be as per the attached Data Sheet A of Section-II.

## 2. SCOPE OF SUPPLY

- 2.1 The valves complete with all accessories shall be supplied as per Data sheet-A of Section-II. For detail refer the same.
- 2.2 Commissioning spares, if any.
- 2.3 Mandatory spares as applicable depending upon the project requirement.

## 3. CODES AND STANDARDS

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

## 4. DESIGN REQUIREMENTS


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

## 5. MATERIALS

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

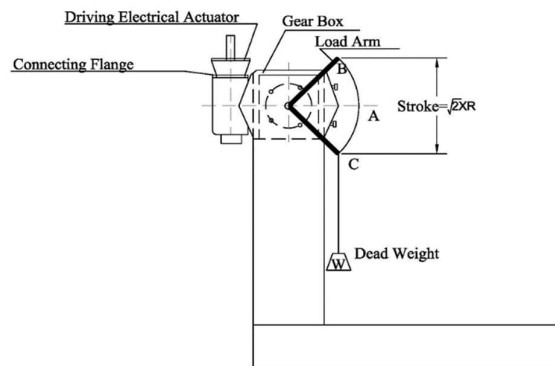
## 6. CONSTRUCTION FEATURES

- 6.1 All valves with screwed ends shall have screwed female parallel pipe threads as per IS: 554/ASME B 1.20.1.
- 6.2 All valves with flanged ends shall have raised face flanges and drilling details as per ANSI B16.5.

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- 6.3 Valves with socket welded and butt welded ends shall have extended pieces. These extended pieces shall be connected through screwed ends on one side and the other end will be suited to match the pipe depending on the type of end details i.e. socket/butt welds ends. Socket weld ends and Butt weld ends shall be as per ASME B16.11 and ASME B16.25 respectively.
- 6.4 Valves of size 200 NB & above shall be gear operated.
- 6.5 Gear box POD Test:
- Gear box POD test shall be done as per the procedure described below or as per the procedure agreed between BHEL/Customer & vendor. In case, the Gear box POD test has been done earlier (within the last 5 years from placement of project specific Purchase Order based on Framework Agreement), Test report/certificate of POD test for identical model/ type/rating of gear box is required to be submitted for review by BHEL/customer. These tests should have been conducted at an independent laboratory or should have been witnessed by reputed customers like NTPC etc. or third party inspection agency like LLOYDS, TUV, DNV etc. If found satisfactory, Gear Box POD test need not be done.


Gear box POD Test shall be carried out only at full rated torque of gear box, throughout the full cycle of testing i.e. at no point during each full cycle of testing; the applied torque should be less than the full rated torque of Gear Box. Refer suggestive Fig.1 below for Gear Box POD test set up. Dead weight and length of arm shall be so selected that the torque generated at point "C" and "B" shall in no case be less than the full rated torque of the gear box.



TEST SET UP

FIG. 1

- Gear box POD test, if required, then the charges for the same shall deemed to be included in the unit quoted prices of main valves. Bidder shall not indicate these charges as a separate head in the price bids. If POD test for gear box are required to be carried out, then the vendor shall do so at his own cost. No extra charge on this account will be admissible to the vendors.
- 6.6 Body seats shall be of renewable type and shall be of moulded PTFE completely contained and shall provide leak tightness in either direction and be suitable for service temperatures.
- 6.7 All the valves shall be provided with integral stop on body limiting quarter turn operation.
- 6.8 All the ball valves shall be of tight shut off type and the lever shall be designed such that lever is parallel to the flow direction when the valve is in open position.
- 6.9 All the ball valves fitted with a steel lever shall be closed by turning the lever in the clockwise direction. The direction of closing the valve and "Shut" position shall be marked on the valves. The lever shall have plastic covering. For gear operated valves the hand wheel shall clearly marked Open & Shut

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with arrows indicating the direction of rotation which they refer. Valves shall be closed by rotating the hand wheel in the clock wise direction when looking at the face of the hand wheel.

- 6.10 Each lever / hand wheel of the valve shall be fitted with a circular/ rectangular nameplate of SS material indicating the purchaser's Valve Tag No. and service description.
- 6.11 Valve end position limit switches (open and close) shall be provided and monitored for valves as per Data Sheet-A.

## 7.0 MANUFACTURE OF VALVES

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

## 8.0 QUALITY ASSURANCE, TESTING & INSPECTION


- 8.1 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.
- 8.2 The Quality Plan enclosed with this specification specify minimum quality control requirement. During contract stage, vendor shall furnish this Quality Plan duly signed & stamped for BHEL approval. Quality plans shall be approved by BHEL and customer. All inspection and testing shall be carried out by BHEL/ BHEL representative and customer (as applicable). In case inspection is by both BHEL and their customer, then the inspection can be carried out jointly or separately, which will be informed later. In case of the foreign bidder, inspection shall be carried out by reputed third party.
- 8.3 The charges for third party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the item by the bidder. This third party agency shall be approved by BHEL.
- 8.4 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.

**Note: There may be minor changes in quality plan depending on customer/consultant comments which will have to be accommodated by vendor at no extra cost.**

- 8.5 Carbon steel valves shall be hydraulically tested for leak tightness before galvanizing the valve body and end pieces (pressure parts) also.
- 8.6 Hydrostatic/Air Tests:
- All the valves shall be tested hydraulically for strength and tightness of seats at the pressures as mentioned in BSEN ISO 17292.
  - No leakage shall be allowed for hydraulic tests and zero leakage shall be allowed for pneumatic tests as mentioned in BSEN ISO 17292, for the valves covered under this specification.
- 8.7 Dimensional and functional checks shall be carried out.

## 9.0 GALVANIZING REQUIREMENT (FOR CARBON STEEL):

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

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#### 10.0 CLEANING, PROTECTION AND PACKING FOR DESPATCH:

- 10.1 Each valve shall be drained, cleaned, prepared and suitably protected in such a way so as to minimize the possibility of damage and deterioration during transit and storage.
- 10.2 The valve shall be dispatched in total assembled form.
- 10.3 Body ends shall be suitably sealed to protect them against damage during transit and storage.
- 10.4 Valves with screwed and socket welding ends shall be protected by means of polythene caps/ rubber and protectors to prevent damage of ends & also to avoid foreign material entering the valve while shipment & storage.
- 10.5 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.
- 10.6 Valve Tag Nos. shall be incorporated in all the dispatch documents.
- 10.7 Proper care shall be taken to avoid damage to the painted surface during transit.
- 10.8 All the valves shall be packed suitably in wooden cases in order to avoid damage during transit and also during storage at site in tropical climate conditions for a period of 15-18 months.
- 10.9 Vendor to provide the following:
- Photographs (soft) of valves duly placed inside the wooden box just before final packing.
  - Photographs (soft) of the wooden box in which the valves have been finally packed just before dispatch.
- Clearance for dispatch of valves will be given only after receiving the photos of valves in satisfactory condition as mentioned in the conditions stated above.

#### 11.0 SPARES

- a) **Mandatory Spares:** As per Data Sheet A


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

#### 12.0 DOCUMENTS TO BE SUBMITTED ALONG WITH OFFER

Bidder shall submit the following documents duly filled, signed and stamped along with the bid:

- a) Compliance sheet
- b) Documents as per the list indicated in the NIT.

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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### 13.0 DOCUMENTS TO BE SUBMITTED AFTER AWARD

#### 13.1 Category-A:

- a. GA Drawing indicating complete cross sectional arrangement of valve, binding dimensions, dismantling clearances, weight and Bill of Material incorporating all material of construction (MOC) of various parts & relevant standard to which MOC confirms to.
- b. Quality plan duly signed and stamped.
- c. Torque & force calculations as per BSEN ISO 17292 for 200NB size valves.

*Submission/Resubmission of above documents shall be considered for delay analysis by BHEL.*

#### 13.2 Category-B:


- a. Gear box POD test procedure or test report/certificate for earlier conducted test in line with clause no. 6.5 of Technical specification.

*Approval on Gear box POD test procedure shall be obtained before final inspection.*

### 14.0 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.

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## SECTION-II

- DATA SHEET – A
- QUALITY PLAN
- COMPLIANCE SHEET

					<b>DATA SHEET - A</b> <b>BALL VALVES - BOM (Upto 150NB)</b> <b>PATRATU 3X800 MW</b>					SPECIFICATION NO.: PE-TS-020-100-M004 SECTION: II REV. NO.: 0 DATE: 15.11.2022 SHEET 1 OF 3										
1	2	3	4	5		6	7	8	9	10	11	12		13	14			15	16	
				SL NO.	TAG NO.							TYPE OF VALVE	SIZE mm (NB)		OPERATION	DESIGN	SERVICE			RATING, DESIGN & TESTING CODE
					PRESSURE KG/CM2(G)	TEMP (DEG °C)														
1	(IA-151 TO IA-180 IA-187 TO IA-224) X 3 Contingency Spares: 51	BALL	15	MAN	8.0	50	INSTRUMENT AIR & SERVICE AIR SYSTEMS	PN 16 AS PER BS EN ISO 17292/ Manufacturer's Std. for GM BALL VALVES	GUN METAL AS PER IS 318 Gr.LTB2	GUN METAL AS PER IS 318 Gr.LTB2	SCREWED AS PER IS:554 FEMALE PARALLEL	WITH TEFLON SEAT	21.8	3.20	255	26	26	26	13	
2	IA-111 TO IA-114, IA-117 IA-118 TO IA-128 (IA-81 TO IA-97) X 3 SA-111 TO SA-133 SA-51 TO SA-83) X3 Contingency Spares: 47	BALL	25	MAN	8.0	50	INSTRUMENT AIR & SERVICE AIR SYSTEMS	PN 16 AS PER BS EN ISO 17292/ Manufacturer's Std. for GM BALL VALVES	GUN METAL AS PER IS 318 Gr.LTB2	GUN METAL AS PER IS 318 Gr.LTB2	SCREWED AS PER IS:554 FEMALE PARALLEL	WITH TEFLON SEAT	34.2	4.00	236	24	24	24	12	
3	IA-61 Contingency Spares: 1	BALL	40	MAN	8.0	50	INSTRUMENT AIR & SERVICE AIR SYSTEMS	PN 16 AS PER BS EN ISO 17292/ Manufacturer's Std. for GM BALL VALVES	GUN METAL AS PER IS 318 Gr.LTB2	GUN METAL AS PER IS 318 Gr.LTB2	SCREWED AS PER IS:554 FEMALE PARALLEL	WITH TEFLON SEAT	48.8	4.00	2	2	2	2	2	
4	IA-55, IA-116 (IA-51 TO IA-54) X 3 (SA-91 TO SA-98) X 3 Contingency Spares: 8	BALL	50	MAN	8.0	50	INSTRUMENT AIR & SERVICE AIR SYSTEMS	PN 16 AS PER BS EN ISO 17292/ Manufacturer's Std. for GM BALL VALVES	GUN METAL AS PER IS 318 Gr.LTB2	GUN METAL AS PER IS 318 Gr.LTB2	SCREWED AS PER IS:554 FEMALE PARALLEL	WITH TEFLON SEAT	60.8	4.50	46	5	5	5	3	
5	IA-115 SA-115 Contingency Spares: 0	BALL	65	MAN	8.0	50	INSTRUMENT AIR & SERVICE AIR SYSTEMS	CL.150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A216 Gr. WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	WITH TEFLON SEAT & HOT DIP GALVANIZED	76.6	4.50	2	2	2	2	2	
6	IA-31 TO IA-37 SA-01 TO SA-06 Contingency Spares: 4	BALL	150	MAN	8.0	50	INSTRUMENT AIR & SERVICE AIR SYSTEMS	CL.150 OF ISO 17292	CAST CARBON STEEL AS PER ASTM A216 Gr. WCB	SS 316	FLANGED AS PER ASME B 16.5 R/F	WITH TEFLON SEAT & HOT DIP GALVANIZED	89.5	4.80	17	2	2	2	2	
												<b>TOTAL</b>		<b>558</b>	<b>61</b>	<b>61</b>	<b>61</b>	<b>34</b>		

## NOTES:-

- IA - INSTRUMENT AIR, MAN - MANUAL, SA - SERVICE AIR
- COMMISSIONING SPARES FOR BALL VALVES:- ONE SET CONSISTS OF BODY SEAL, STEM WASHER & STEM SEAL.



	<b>DATA SHEET-A</b> <b>BALL VALVES</b> <b>3X800MW PATRATU STPP</b>	SPECIFICATION No.: PE-TS-020-100-M004	
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### Materials of Construction

SL. No.	PART NAME	MATERIAL (CARBON STEEL BODY)	MATERIAL (GUN METAL BODY)
1	BODY AND END PIECES	CAST CARBON STEEL AS PER ASTM A 216 Gr. WCB (ABOVE 50 NB) (HOT DIP GALVANISED)	GUN METAL AS PER IS:318 Gr. LTB2 (UPTO 50 NB)
2	BALL, STEM AND GLAND	STAINLESS STEEL AS PER AISI 316 (BALL MIRROR FINISH)	GUN METAL AS PER IS:318 Gr. LTB2, IS:320 HT2 (STEM)
3	SEAT RING	VIRGIN UNFILLED OIL FREE PTFE (Non-Asbestos Type)	VIRGIN UNFILLED OIL FREE PTFE (Non-Asbestos Type)
4	BODY SEAL, STEM SEAL AND GLAND PACKING	VIRGIN UNFILLED OIL FREE PTFE (Non-Asbestos Type)	VIRGIN UNFILLED OIL FREE PTFE (Non-Asbestos Type)
5	BODY STUD	AISI 316	AISI 316
6	BODY NUT	AISI 316	AISI 316
7	GLAND NUT	AISI 316	AISI 316
8	LEVER	CARBON STEEL (HOT DIP GALVANISED) WITH PLASTIC SLEEVE GRIP	CARBON STEEL (HOT DIP GALVANISED) WITH PLASTIC SLEEVE GRIP
9	LEVER ADOPTER	CARBON STEEL (HOT DIP GALVANISED)	CARBON STEEL (HOT DIP GALVANISED)
10	STOPPER PIN	AISI 316	AISI 316
11	STEM WASHERS	SPRING STEEL	SPRING STEEL
12	NAME PLATE (FOR VALVE TAG No.)	SS 316 (2 MM THICK)	SS 316 (2 MM THICK)
13	GEAR BOX	IF APPLICABLE	NOT APPLICABLE
13.1	MAIN HOUSING/ COVER (TOTALLY ENCLOSED CONSTRUCTION)	CAST IRON IS:210 GR. FG 220/260	
13.2	INPUT SHAFT	13% CR SS/ EN8 ( ~200 BN)	
13.3	WORM	EN8 (~200 BN)	
13.4	WORM WHEEL	DUCTILE IRON/S.G. IRON	
13.5	HAND WHEEL	MALLEABLE IRON	

	<b>DATA SHEET-A</b> <b>BALL VALVES</b> <b>3X800MW PATRATU STPP</b>	SPECIFICATION No.: PE-TS-020-100-M004	
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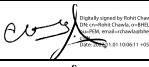



14	PAINTING	NO PAINTING NEEDS TO BE DONE ON VALVES AS ALL PARTS OF THE VALVES ARE GALVANISED. HOWEVER, GEARBOX SHALL BE SUITABLY PAINTED TO PREVENT CORROSION.	NO PAINTING REQUIRED
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	MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS		<b>QUALITY PLAN</b>					SPEC. NO.: PE-TS-020-100-M004		DATE: 05-05-2022			
			CUSTOMER : PVUNL					QP NO.: PE-V0-434-100-M051A		DATE: 01-11-2022			
			PROJECT: 3x800MW PATRATU STPP					PO NO.: LATER		DATE:			
			ITEM: GM BALL VALVES (SIZE 15 TO 50NB/ PN16) & CCS (SIZE 65 TO 150 NB/ CLASS 150)			SYSTEM: INST. AIR LINE		SECTION: II		SHEET 1 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	6		7	8	9	*	**		
					M	C/N				D	M	C	

<b>1.0</b>	<b>MATERIALS</b>												
1.1	BODY, END PIECES BALL, SPINDLE, GLAND, LEVER, FASTENERS	1. PHYSICAL, CHEMICAL PROPS.	MA	PHYSICAL, CHEM. TESTING	ONE PER BATCH/ LOT/ HEAT	APPD. DRG. / REL. STD.	APPD. DRG./ REL. STD.	MILL T.C.	√	P/W	V	V	CORRELATION REQD. FOR BODY & END PIECES W.R.T. HEAT Nos.
		2. HEAT TREATMENT	CR	REVIEW OF H.T. RECORDS	100%	-DO-	-DO-	H.T. INTERNAL INSPN. RECORDS	√	P/W	V	V	
		3. SURFACE DEFECTS	MA	VISUAL	100%	MSS-SP-55	FREE FROM DEFECTS	INSPN. REPORT	√	P/W	V	V	
1.2	BODY, END PIECES	1. SURFACE DEFECTS	CR	PENETRANT TEST	100%	ASTM E 165	ANSI B 16.34	TEST REPORT	√	P/W	V	V	APPLICABLE ONLY FOR SS CASTINGS.
<b>2.0</b>	<b>IN PROCESS INSPECTION</b>												
2.1	MACHINING OF ALL COMPONENTS	1. DIMENSIONS	MA	MEASUREMENT	100%	MFG. DRG.	MFG. DRG.	LOG BOOK	-	P/W	-	-	
		2. SURFACE FINISH	MA	VISUAL	100%	MFG. DRG.	MFG. DRG.	LOG BOOK	-	P/W	-	-	
		3. HARDNESS (FOR BALL AND SPINDLE)	MA	HARDNESS TESTING	100%	APPD. DRG. / REL. STD.	APPD. DRG. / REL. STD.	T.C.	√	P/W	V	V	
		4. SURFACE DEFECTS	CR	PENETRANT TEST	100%	ASTM E 165	ANSI B16.34	T.C.	√	P/W	V	V	FOR BALL, SPINDLE SEATS & MACHINED SURFACES.
<b>3.0</b>	<b>BEFORE GALVANISING - SHELL TEST FOR PRESSURE PARTS (FOR CS VALVES ONLY)</b>												
3.1	BODY, END PIECES (PRESSURE PARTS)	LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%	APPD. DRG.	NO LEAKAGE	T.C.	√	P/W	V	V	
4.0	HOT DIP GALVANIZING OF CARBON STEEL BODY, END PIECES AND ALL OTHER CARBON STEEL VALVE PARTS	1. FREEDOM FROM SURFACE DEFECTS	MA	VISUAL	100%	IS:2629	IS:2629	INSPN REPORT	√	P/W	V	V	
		2. UNIFORMITY IN THICKNESS	MA	THICKNESS	VALVE BODY AT RANDOM	IS:2629	IS:2629	INSPN REPORT	√	P/W	V	V	THICKNESS 50 MICRONS ( MIN.) TO BE CHECKED WITH ELCOMETER.

BIDDER/SUPPLIER	
Sign & Date	
Seal	





BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		Rohit Chawla	Checked by:		Ashish Panigrahi
Reviewed by:		Prince Malik	Reviewed by:		Harish Kumar

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

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SL NO.	MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS		QUALITY PLAN					SPEC. NO.: PE-TS-020-100-M004		DATE: 05-05-2022				
			CUSTOMER : PVUNL					QP NO.: PE-V0-434-100-M051A		DATE: 01-11-2022				
			PROJECT: 3x800MW PATRATU STPP					PO NO.: LATER		DATE:				
			ITEM: GM BALL VALVES (SIZE 15 TO 50NB/ PN16) & CCS (SIZE 65 TO 150 NB/ CLASS 150)			SYSTEM: INST. AIR LINE		SECTION: II		SHEET 2 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	6		7	8	9	*	**			
					M	C/N				D	M	C	N	
		3. ADHESION	MA	KNIFE TEST	-DO-	IS:2629	IS:2629	INSPN REPORT	√	P/W	V	V		
<b>5.0</b>	<b>ASSEMBLY OF ALL VALVE</b>													
5.1	BALL AND SEAT	MIRROR FINISH (BALL)	CR	BUFFING/ GRINDING/ MACHINING	100%	THE SURFACE SHALL BE SMOOTH AND SHALL HAVE UNIFORM CONTACT WITH SOFT SEAT		LOG BOOK	√	P/W	V	V		
<b>6.0</b>	<b>FINAL TESTING</b>													
6.1	ASSEMBLY	1. DIMENSIONS	MA	MEASUREMENT	100%	REF. NOTE NO.-2	APPD. DRG.	APPD. DRG.	INSPN. REPORT	√	P/W	W	W	
		2. OPENING/ CLOSING	MA	OPERATION	100%		SMOOTH OPERATION OF VALVE	SMOOTH OPERATION OF VALVE	-DO-	√	P/W	W	W	
			MA	TORQUE TESTING	100%		TORQUE CALCULATIONS	TORQUE WITHIN CALCULATED VALUE	-DO-	√	P/W	W	W	For 200NB size valve
		3. APPEARANCE: WORKMANSHIP, ORIENTATION, MARKING, TAG No.	MA	VISUAL	100%		APPD. DRG.	APPD. DRG.	INSPN. REPORT	√	P/W	W	W	
6.2	BODY	1. LEAK TIGHTNESS	CR	HYDRAULIC TEST	100%		APPD. DRG.	BS EN ISO 17292	T.C.	√	P/W	W	W	
6.3	SEAT	1. LEAK TIGHTNESS	CR	-DO-	100%		-DO-	-DO-	-DO-	√	P/W	W	W	
		2. LEAK TIGHTNESS	CR	PNEUMATIC TEST	100%		-DO-	-DO-	-DO-	√	P/W	W	W	
6.4	COMMISSIONING SPARES	WORKMANSHIP & SUITABILITY	MA	VISUAL	100%	100%	-DO-	APPD. DRG.	INSPN. REPORT	√	P/W	W	W	
<b>7.0</b>	PACKING	FIXING OF NAMEPLATE WITH VALVE TAG NOS	MA	VISUAL	100%	100%	APPD. DRG. / PACKING PROCEDURE (IF APPLICABLE).	APPD. DRG. / PACKING PROCEDURE (IF APPLICABLE)	SOFT COPY OF PHOTOGRAPHS	√	P/W	W	-	REFER NOTE-3.

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		Rohit Chawla	Checked by:		Ashish Panigrahi
Reviewed by:		Prince Malik	Reviewed by:		Harish Kumar

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

1151612/2022/PS-PEM-MPL

	MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS		<b>QUALITY PLAN</b>					SPEC. NO.: PE-TS-020-100-M004		DATE: 05-05-2022	
			CUSTOMER : PVUNL					QP NO.: PE-V0-434-100-M051A		DATE: 01-11-2022	
			PROJECT: 3x800MW PATRATU STPP					PO NO.: LATER		DATE:	
			ITEM: GM BALL VALVES (SIZE 15 TO 50NB/ PN16) & CCS (SIZE 65 TO 150 NB/ CLASS 150)			SYSTEM: INST. AIR LINE		SECTION: II		SHEET 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	6	7	8	9	* D	** M C N	

**NOTES:**

- In case of foreign supplier, all test certificates shall be furnished by the supplier, duly witnessed/verified by supplier's TPIA.
- 10% or min. 2 nos. at random by BHEL/Customer & 100% by supplier for each type, size & rating.
- Following to be noted for packing:
  - Material shall be packed suitably in order to avoid damage of paint and valve during transit and also during storage at site in tropical climate conditions.
  - Photographs of the packing (with LR No.) just before dispatch for information of PEM.
- BHEL reserves the right for conducting repeat tests, if required.
- Welding and Impregnation of casting are not permitted.
- The latest revision/year of issue of all the standard indicated in the QP shall be referred.

**LEGENDS:**

\*: Records, identified with "Tick"(√) shall be essentially included by supplier in QA Documentation.

\*\* M: Supplier/ Manufacturer/ Sub-Supplier

P: Perform

MA: Major Characteristic

MTC: Mill Test Certificate

D: Documentation

C: Main Supplier/BHEL/ Third Party Inspection agency

W: Witness

MI: Minor Characteristic

PT: Penetrant Test

NDT: Non Destructive Test





N: Customer

V: Verification


CR: Critical Characteristic

UT: Ultrasonic Test

BIDDER/SUPPLIER	
Sign & Date	
Seal	

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		Rohit Chawla	Checked by:		Ashish Panigrahi
Reviewed by:		Prince Malik	Reviewed by:		Harish Kumar

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	<b>COMPLIANCE SHEET</b> BALL VALVES 3X800MW PATRATU STPP	SPECIFICATION NO. PE-TS-020-100-M004
		SECTION: II
		REV: 0
		DATE: 15.11.2022
		SHEET 1 OF 1

I hereby comply/not comply (\*) to all the requirements of this technical specification in totality.

\* In case the bidder does not comply to the technical specification, the deviations shall be explicitly listed in

TABLE-1 below in case of procurement through GeM portal

Or else

Cost of Withdrawal sheet of GCC

**TABLE – 1**

S. NO.	VOLUME / SECTION	PAGE NO.	CLAUSE NO.	COMPLETE DESCRIPTION OF DEVIATION	REASON FOR QUOTING DEVIATION
<b>TECHNICAL DEVIATIONS ONLY</b>					

**NOTES FOR TABLE-1:**

1. All the bidders have to list out Technical deviations (if any) in detail in the above format.
2. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
3. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at the discretion of the Purchaser.
4. Bidders to note that any Technical deviation not listed above and requested after Part-I opening shall not be considered.

<b>PARTICULARS OF BIDDER'S AUTHORISED REPRESENTATIVES</b>		
<b>NAME</b>	<b>DESIGNATIONS</b>	<b>SIGN &amp; DATE</b>

	<b>PRE - QUALIFYING REQUIREMENTS</b>	DOCUMENT No.: PE-TS-434-000-M059
		REVISION No.: 00    DATE: 15.11.2022
		SHEET 1 of 3

Standard document No.: PE-TS-999-000-M059

**Project: 3X800MW PATRATU STPP****Package: Ball Valves****CRITERIA FOR EVALUATION (TECHNICAL):****1. Technical Pre-Qualifying Requirements:**

1.1 The bidder should have designed, in-house manufactured, tested, inspected and supplied Ball Valves (as mentioned below) for use in a power plant or for similar application.

**Category-A:** Minimum size of 50NB with FCS/FSS/FAS with #800 or Gun metal with #PN 16.0 for use in a power plant or similar application.

**Category-B:** Minimum size of 150NB with CCS/CSS/CAS with min. #150 for use in a power plant or similar application.

*Bidder to fulfill the PQR of both the categories individually.*

1.2 The item(s) mentioned in point 1.1 should have performed successfully in similar installations for at least one year. To establish meeting this requirement, the bidder shall conform to any one of the following clauses:

- (i) Execution of two purchase orders for different End-users with the item(s) performing successfully for one (1) year from date of commissioning to the date of bid submission as defined in Notice Inviting Tender (NIT) by BHEL. Different projects of a customer shall be considered as different End-users.
- (ii) Minimum one (1) repeat contract from two (2) different Purchasers (i.e. 2 no. of Purchase orders from each purchaser). A contract shall be considered as repeat, when the second contract is given by the same purchaser after lapse of minimum one (1) year from supply completion of first contract.
- (iii) Execution of one (1) purchase order as per sl. no. (i) above from one End-user and one (1) repeat contract from another Purchaser as per sl. no. (ii) above.
- (iv) Three (3) contracts from one (1) purchaser. Second and third contracts shall be after lapse of minimum one (1) & two (2) years respectively from supply completion of first contract.

1.3 The bidder to furnish the following documents, as applicable, in support of the above:

- a) For point 1.2(i): Performance certificates from End-user (duly signed & dated) specifying that the product is performing successfully for one (1) year from date of commissioning along with correlated purchase order(s).
- b) For point 1.2 (ii) & (iv): Purchase Order(s), Material Dispatch Clearance Certificate (MDCC)/ Material Receipt Certificate (MRC)/Lorry Receipt (LR)/ Supply Invoice.

1.4 In addition to above, bidder should have the following facilities for maximum size of different material as per BHEL requirement as mentioned in Data Sheet-A of Technical Specification:

- a) Capability of designing and manufacturing of the item(s).

**PREPARED BY:**

  
Digitally signed by Rohit Chawla  
 DN: cn=Rohit Chawla, o=BHEL,  
 ou=PEM, email=rchawla@bhel.in,  
 c=IN  
 Date: 2022.11.15 15:12:55 +05'30'

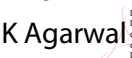
**NAME: ROHIT CHAWLA**  
**DESIGNATION: Manager**  
**DEPT.: PS-PEM/ MPL**

**REVIEWED BY:**

  
Digitally signed by Prince Malik  
 DN: cn=Prince Malik, o=BHEL,  
 ou=PEM MPL,  
 email=princemalik@bhel.in, c=IN  
 Date: 2022.11.15 16:28:48 +05'30'

**NAME: PRINCE MALIK**  
**DESIGNATION: Sr. Mgr.**  
**DEPT.: PS-PEM/ MPL**

**APPROVED BY:**

  
Digitally signed by B K Agarwal  
 DN: cn=B K Agarwal, o=BHEL,  
 ou=PEM-MPL, email=bimal@bhel.in,  
 c=IN  
 Date: 2022.11.15 16:32:21 +05'30'

**NAME: B K AGARWAL**  
**DESIGNATION: AGM/DH-MPL**  
**DEPT.: PS-PEM/ MPL**

	<b>PRE - QUALIFYING REQUIREMENTS</b>	DOCUMENT No.: PE-TS-434-000-M059
		REVISION No.: 00    DATE: 15.11.2022
		SHEET 2 of 3

- b) In-house testing facilities for carrying out tests as per relevant standards & Quality plan. In case, the in-house testing facilities are not available, then bidder shall furnish undertaking that test(s) will be carried out from govt. approved lab or test house recognized by reputed customers.

Bidder to submit supporting documents (Purchase Order (s)/ Certificate indicating capacity and details/ undertaking of manufacturing & testing facilities) for point (a) & (b) above.

- 1.5 To establish business continuity, bidder is required to submit at least two (2) Purchase order with min. size of ball valve as specified below in last 3 (three) years prior to the date of bid submission as defined by BHEL-PEM in NIT for each category.

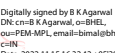
**Category-A:** Minimum size of 15NB.

**Category-B:** Minimum size of 65NB.

- 2.0 Bidder to also comply with below mentioned general points:
- 2.1 Offers of the JV companies/ Joint Bidders/ bidders having collaboration/ licensing agreement/ MOU/ Indian subsidiaries shall be evaluated as follows:
- If bidder happens to be an Indian subsidiaries of foreign OEM, then the credentials of the foreign OEM can also be considered for meeting PQR.
  - If bidder happens to be the Joint Venture Company, then the credentials of any of JV partners can be also considered for meeting PQR.
  - If bidder happens to be the having valid collaboration agreement/ MOU/ licensing agreement with some other company, then the credentials of collaborator/ MOU partner/ licensing company can also be considered for meeting PQR.



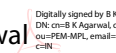
**Note:** If bidder(s) qualifies on the basis of credentials of his principal/ JV partner/ Collaborator/ joint bidder etc., then the principal/ JV partner/ Collaborator/ MOU partner/ joint bidder shall be responsible for overall design vetting and warranty/ guarantee of the package. The scope matrix clearly defining their respective roles including design vetting, manufacturing of critical component, E&C etc. and warranty/ guarantee shall be submitted along with the offer.

- 2.2 Bidder to note that the arrangement of bidding (joint bid partners/ collaborator/ MOU partner/ licensing company etc.) once offered to BHEL as a part of bidding documents cannot be changed till the execution of contract(s).
- 2.3 Consideration of offer shall be subject to customer's approval of bidders, if applicable.
- 2.4 Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.
- 2.5 Notwithstanding anything stated above, BHEL reserves the right to assess the capabilities and capacity of the bidder/collaborators to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL.

<p><b>PREPARED BY:</b></p>  <p><small>Digitally signed by Rohit Chawla DN: cn=Rohit Chawla, o=BHEL, ou=PEM, email=rchawla@bhel.in, c=IN Date: 2022.11.15 15:13:09 +05'30'</small></p> <p><b>NAME: ROHIT CHAWLA</b> <b>DESIGNATION: Manager</b> <b>DEPT.: PS-PEM/ MPL</b></p>	<p><b>REVIEWED BY:</b></p>  <p><small>Digitally signed by Prince Malik DN: cn=Prince Malik, o=BHEL, ou=PEM-MPL, email=princemalik@bhel.in, c=IN Date: 2022.11.15 16:29:06 +05'30'</small></p> <p><b>NAME: PRINCE MALIK</b> <b>DESIGNATION: Sr. Mgr.</b> <b>DEPT.: PS-PEM/ MPL</b></p>	<p><b>APPROVED BY:</b></p>  <p><small>Digitally signed by B K Agarwal DN: cn=B K Agarwal, o=BHEL, ou=PEM-MPL, email=bimal@bhel.in, c=IN Date: 2022.11.15 16:32:42 +05'30'</small></p> <p><b>NAME: B K AGARWAL</b> <b>DESIGNATION: AGM/DH-MPL</b> <b>DEPT.: PS-PEM/ MPL</b></p>
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	<b>PRE - QUALIFYING REQUIREMENTS</b>	DOCUMENT No.: PE-TS-434-000-M059
		REVISION No.: 00    DATE: 15.11.2022
		SHEET 3 of 3

<p>2.6 After satisfactory fulfillment of all the above criteria/requirement, offer shall be considered for further evaluation as per NIT and all the other items of the tender.</p> <p>2.7 Bidder to ensure that Third Party/customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/ certificate issuing authority such as name, designation of issuing authority, its organization contact number and email-id etc. In case the same is found unavailable, purchaser has right to reject such document from evaluation.</p>
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<p><b>PREPARED BY:</b></p>  <p><small>Digitally signed by Rohit Chawla DN: cn=Rohit Chawla, o=BHEL, ou=PEM, email=rchawla@bhel.in, c=IN Date: 2022.11.15 15:13:24 +05'30'</small></p> <p><b>NAME: ROHIT CHAWLA</b> <b>DESIGNATION: Manager</b> <b>DEPT.:PS-PEM/ MPL</b></p>	<p><b>REVIEWED BY:</b></p> <p>Prince Malik</p>  <p><small>Digitally signed by Prince Malik DN: cn=Prince Malik, o=BHEL, ou=PEM-MPL, email=princemalik@bhel.in, c=IN Date: 2022.11.15 16:29:24 +05'30'</small></p> <p><b>NAME: PRINCE MALIK</b> <b>DESIGNATION: Sr. Mgr.</b> <b>DEPT.: PS-PEM/ MPL</b></p>	<p><b>APPROVED BY:</b></p> <p>B K Agarwal</p>  <p><small>Digitally signed by B K Agarwal DN: cn=B K Agarwal, o=BHEL, ou=PEM-MPL, email=bmal@bhel.in, c=IN Date: 2022.11.15 16:32:59 +05'30'</small></p> <p><b>NAME: B K AGARWAL</b> <b>DESIGNATION: AGM/DH-MPL</b> <b>DEPT.: PS-PEM/ MPL</b></p>
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## ANNEXURE II TO RISK & COST

1. In case of delays (beyond the maximum late delivery period as per LD clause) in supplies, or if there be defective supplies or non-fulfilment of any other terms and conditions of the Contract as enumerated subsequently in this clause, then, without prejudice to its right to recover any expenses, losses or damages to which the Buyer may be put in or sustain by reason of the Seller/Contractor's default or breach of Order/Contract or to suspend business dealings with the Seller/Contractor in terms of the Buyers' Guidelines for Suspension of Business Dealings as applicable from time to time, the Buyer shall also be entitled to cancel the Order/Contract either in whole or portion thereof without compensation to Seller. On the occurrence of any of the acts/omissions mentioned below, the Buyer may if it so desires, procure upon such terms and in such manner as deemed appropriate, plant/equipment/ stores not so delivered or others of similar description where plant/ equipment/ stores exactly complying with particulars are not, in the opinion of the Buyer (which shall be final), readily procurable, at the risk and cost of the Seller.

The Seller shall be liable to the Buyer for any excess costs incurred thereof and the Seller shall continue the performance of the Order/Contract to the extent not cancelled under the provisions of this clause. The Seller shall on no account be entitled to any gain on such repurchases. If the Bidder does not agree to this Risk Purchase clause, BHEL reserves the right to reject the bid/offer of the Bidder. The order/contract may be cancelled in whole or part thereof and Risk & Cost Clause in line with terms and conditions of PO/Contract may be invoked by the Buyer in any of the following cases:

- i. If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/services vis-à-vis delivery/execution timeline as stipulated in the contract, backlog attributable to the Seller including unexecuted portion of supply does not appear to be executable within balance period available;
- ii. delivering goods or materials not of the contracted quality and failing to adhere to the contract specifications/execution methodology;
- iii. withdrawal from or repudiation/abandonment of the supply/services by the Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the order/Contract either in whole or in part or otherwise fails to perform the Order/Contract.
- iv. Non supply by the Seller within scheduled completion/delivery period as per contract or as extended from time to time for reasons attributable to the Seller;
- v. Termination of Contract on account of any other reason(s) attributable to the Seller.
- vi. Assignment, transfer, sub-letting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vii. If the Seller be an individual or a Sole Proprietorship, in the event of death or insanity of the Seller.
- viii. If the Seller/Contractor being an individual or if a partnership firm thereof, shall at any time be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;
- ix. If the Seller/Contractor being a Company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager
- x. Non- Compliance to any contractual condition or any other default attributable to the Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

2. BHEL's right to go for Risk and Cost, Calculation of Risk and Cost amount & L D, recovery options to BHEL are given as under: -

2.1 BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor *after due notice of a period of 14 days' by BHEL* in any of the following cases:

- i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-a-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;
- ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;
- iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;
- iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;
- v) Termination of Contract on account of any other reason (s) attributable to Seller.
- vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;
- viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;
- ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;
- x) Non-compliance to any contractual condition or any other default attributable to Seller.

### **2.1.1 Risk & Cost Amount against Balance Work:**

Risk & Cost amount against balance work shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Work (\*) as per rates of new contract

B= Value of Balance scope of Work (\*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

### **2.1.2 Balance scope of work (in case of termination of contract):**

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

### **2.1.3 LD against delay in executed work in case of Termination of Contract:**

LD against delay in executed work shall be calculated in line NIT terms & conditions, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below:

- i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
- ii. Let the value of executed work till the time of termination of contract = X
- iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
- iv. Delay in executed work attributable to contractor i.e.  $T2 = [1 - (X/Y)] \times T1$
- v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

### **2.2 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor:**

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk

& cost has been invoked shall be made from the following:

- a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
- b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.
- c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

*In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.*



**CORPORATE QUALITY ASSURANCE/ कॉर्पोरेट गुणवत्ता आश्वासन**  
**MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT**  
**मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट**

<b>Ref No:</b> संदर्भ सं.:				<b>Date:</b> तिथि:			
<b>i. Main Contractor</b> मुख्य संविदाकार							
<b>ii. Project</b> परियोजना							
<b>iii. Package Name</b> पैकेज का नाम					<b>Package No</b> पैकेज सं.		
<b>iv. Proposed Item/Scope of Sub-contracting</b> उप-संविदा(अनुबंध) का प्रस्तावित मद/ दायरा							
<b>v. Item covered under</b> निम्नलिखित के अंतर्गत शामिल मद	<b>Schedule-1</b> /अनुसूची- 1				<b>As per contract clause No-</b> अनुबंध के अनुसार खंड सं.--		
	<b>Schedule-2 अनुसूची- -2</b>						
<b>vi.</b>	<p><b>If item is Schedule-1 and proposed sub-vendor is indigenous, Main Contractor to explain how the contractual provisions will be fulfilled</b> /यदि</p> <p>मद अनुसूची -1 है और प्रस्तावित उप-विक्रेता स्वदेशी है, तो मुख्य संविदाकार को स्पष्ट करना होगा कि संविदा/अनुबंध के प्रावधान कैसे पूरे किए जाएंगे</p>						
<b>vii.</b>	<b>Name and Address of the proposed Sub-vendor's works</b> /प्रस्तावित सब-वेंडर का नाम तथा पता						
<b>viii.</b>	<b>PO placement date/ Start of manufacturing (if self-manufactured) as per L2 network</b> पीओ नियोजन की तिथि / एल- 2 नेटवर्क के अनुसार विनिर्माण (यदि स्व-निर्मित है) की शुरुआत						
<b>ix.</b>	<b>Item Description</b> (Type/Size/Rating/Scope of Sub-Contracting) मद का विवरण (प्रकार / आकार / रेटिंग / उप-अनुबंध का दायरा)	<b>Total quantity of proposed item envisaged in this package (Nos/ Running Meters/ Kgs/ Tons etc)</b> इस पैकेज में परिकल्पित प्रस्तावित मद की कुल मात्रा (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि)	<b>Quantity proposed to be procured from proposed sub-vendor (Nos/ Running Meters /Kgs /Tons etc)</b> प्रस्तावित उप-विक्रेता (संख्या / क्रियाशील मीटर / किलोग्राम / टन आदि) से खरीदी जाने वाली मात्रा	<b>Timeline for quantity requirements as per project schedule &amp; whether the proposed Sub-vendor equipped with adequate capacity to supply proposed order quantity in time</b> / परियोजना समय सूची के अनुसार मात्रा आवश्यकताओं के लिए समय-सीमा और क्या प्रस्तावित उप-विक्रेता समय पर प्रस्तावित मांग की मात्रा की आपूर्ति करने में पूरी तरह से सक्षम है			
<b>x.</b>	<b>Supply experience of the proposed sub-vendor (including supplies to Main Contractor, if any) for similar item/scope of sub-contracting, for last 3 years (Note:- Only relevant experience details w.r.t. proposed item/scope of subcontracting to be brought out here)</b> पिछले 3 वर्षों के लिए उप-अनुबंध के समान मद / दायरे के लिए प्रस्तावित सब-वेंडर (मुख्य संविदाकार हेतु आपूर्ति, यदि कोई हो, सहित) का आपूर्ति अनुभव (नोट: - उप-अनुबंध के प्रस्तावित मद / दायरे के संबंध में केवल प्रासंगिक अनुभव के विवरण का उल्लेख हो						



**CORPORATE QUALITY ASSURANCE/ कॉरपोरेट गुणवत्ता आश्वासन**  
**MAIN CONTRACTOR'S PROPOSAL CUM EVALUATION REPORT**  
**मुख्य संविदाकार प्रस्ताव सह मुल्यांकन रिपोर्ट**

Project/Package परियोजना/पैकेज	Customer Name ग्राहक का नाम	Supplied Item (Type/Rating/Model /Capacity/Size etc) आपूर्ति मद् (प्रकार/रेटिंग /मॉडल /क्षमता/आकार आदि)	PO ref no/date पीओ संदर्भ सं./तिथि	Supplied Quantity की मात्रा	Date of Supply आपूर्ति की तिथि

*We confirm that as per our assessment, the proposed sub-vendor has requisite capabilities & supply experience and is suitable for supplying the proposed item/scope of sub-contracting/हम अपने आकलन के अनुसार इस बात की पुष्टि करते हैं कि, प्रस्तावित उप-विक्रेता के पास अपेक्षित क्षमता और आपूर्ति करने का अनुभव है और उप-अनुबंध के दायरे /प्रस्तावित मद् की आपूर्ति के लिए उपयुक्त है।*

Name:	Desig:	Contact No:	Sign:	Date:
नाम:	पद:	दूरभाष सं.:	हस्ताक्षर:	तिथि:

Company's Seal/Stamp:- कंपनी का मुहर:-



**CORPORATE QUALITY ASSURANCE/ कॉर्पोरेट गुणवत्ता आश्वासन**  
**SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली**

<b>i.</b>	<b>Item/Scope of Sub-contracting</b> उप-संविदा(अनुबंध) का मद/ दायरा	
<b>ii.</b>	<b>Address of the registered office</b> पंजीकृत कार्यालय का पता	<b>Details of Contact Person</b> संपर्क व्यक्ति का विवरण <b>(Name, Designation, Mobile, Email)</b> (नाम, पदनाम, मोबाइल, ईमेल)
<b>iii.</b>	<b>Name and Address of the proposed Sub-vendor's works where item is being manufactured</b> प्रस्तावित उप-विक्रेता के कार्यों का नाम और पता, जहां मद का निर्माण किया जा रहा है	<b>Details of Contact Person:</b> संपर्क व्यक्ति का विवरण <b>(Name, Designation, Mobile, Email)</b> (नाम, पदनाम, मोबाइल, ईमेल)
<b>iv.</b>	<b>Annual Production Capacity for proposed item/scope of sub-contracting</b> उप-संविदा(अनुबंध) के प्रस्तावित मद / दायरे के लिए वार्षिक उत्पादन क्षमता	
<b>v.</b>	<b>Annual production for last 3 years for proposed item/scope of sub-contracting</b> उप-संविदा(अनुबंध) के प्रस्तावित मद / दायरे के लिए पिछले 3 वर्षों का वार्षिक उत्पादन	
<b>vi.</b>	<b>Details of proposed works</b> प्रस्तावित कार्यों का विवरण	
1.	<b>Year of establishment of present works</b> वर्तमान फैक्टरी की स्थापना का वर्ष	
2.	<b>Year of commencement of manufacturing at above works</b> उपरोक्त फैक्टरी में निर्माण कार्य शुरू होने का वर्ष	
3.	<b>Details of change in Works address in past (if any)</b> पूर्व में फैक्टरी स्थल में परिवर्तन का विवरण (यदि कोई हो)	
4.	<b>Total Area</b> कुल क्षेत्र	
	<b>Covered Area</b> शामिल क्षेत्र	
5.	<b>Factory Registration Certificate</b> फैक्टरी पंजीकरण प्रमाण पत्र	<b>Details attached at Annexure – F2.1</b> विवरण अनुलग्नक- एफ 2.1 पर संलग्न है
6.	<b>Design/ Research &amp; development set-up</b> डिजाइन / अनुसंधान और विकास सेटअप <b>(No. of manpower, their qualification, machines &amp; tools employed etc.)</b> (श्रमिकों की संख्या, उनकी योग्यता, मशीन और उपलब्ध उपकरण आदि)	<b>Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design</b> <b>Details attached at Annexure – F2.2</b> <b>(if applicable)</b> लागू / लागू नहीं, अगर विनिर्माण मुख्य संविदाकार / खरीददार के डिजाइन के अनुसार है) विवरण अनुलग्नक –एफ 2.2 पर संलग्न है। (यदि लागू हो)
7.	<b>Overall organization Chart with Manpower Details</b> <b>(Design/Manufacturing/Quality etc)</b> मैनपावर विवरण के साथ समग्र संगठन का चार्ट( डिजाइन / विनिर्माण / गुणवत्ता आदि )	<b>Details attached at Annexure – F2.3</b> विवरण अनुलग्नक – F2.3 में संलग्न है।



**CORPORATE QUALITY ASSURANCE/ कॉर्पोरेट गुणवत्ता आश्वासन**  
**SUB-VENDOR QUESTIONNAIRE/ सब-वेंडर प्रश्नावली**

8.	<b>After sales service set up in India, in case of foreign sub-vendor(Location, Contact Person, Contact details etc.)</b> भारत में विक्री सेवा की स्थापना के बाद, विदेशी उप-विक्रेता के मामले में( स्थल , संपर्क व्यक्ति, संपर्क विवरण आदि)	<b>Applicable / Not applicable</b> लागू / लागू नहीं  <b>Details attached at Annexure – F2.4</b> विवरण अनुलग्नक -2.4 पर संलग्न है।			
9.	<b>Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any</b> फ्लोचार्ट सहित विनिर्माण प्रक्रिया निष्पादन योजना , जिसमें आउटसोर्स प्रक्रिया, यदि कोई हो, सहित कच्चे माल से तैयार उत्पाद तक विनिर्माण के विभिन्न चरणों को दर्शाया गया हो,	<b>Details attached at Annexure – F2.5</b> विवरण अनुलग्नक - F2.5में संलग्न है।			
10.	<b>Sources of Raw Material/Major Bought Out Item</b> कच्चे माल के स्रोत / खरीदे हुए मुख्य मद	<b>Details attached at Annexure – F2.6</b> विवरण अनुलग्नक - F2.6में संलग्न है।			
11.	<b>Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing</b> कच्चे माल / खरीदे हुए मद, प्रक्रियाबद्ध, अंतिम परीक्षण, पैकिंग करते समय गुणवत्ता नियंत्रण	<b>Details attached at Annexure – F2.7</b> विवरण अनुलग्नक - F2.7 पर संलग्न है			
12.	<b>Manufacturing facilities</b> (List of machines, special process facilities, material handling etc.) विनिर्माण सुविधा(मशीनों की सूची, विशेष प्रक्रिया सुविधाएं, सामग्री रख-रखाव आदि)	<b>Details attached at Annexure – F2.8</b> विवरण अनुलग्नक - F2.8में संलग्न है।			
13.	<b>Testing facilities (List of testing equipment)</b> परीक्षण सुविधाएं( परीक्षण उपकरण की सूची )	<b>Details attached at Annexure – F2.9</b> विवरण अनुलग्नक – F2. 9 में संलग्न है।			
14.	<b>If manufacturing process involves fabrication then-</b> यदि निर्माण प्रक्रिया में फेब्रिकेशन की गई है तो- <b>List of qualified Welders</b> पात्र वेल्डर की सूची <b>List of qualified NDT personnel with area of specialization</b> विशेषज्ञता के क्षेत्र सहित पात्र एनडीटी कार्मिकों की सूची	<b>Applicable / Not applicable</b> लागू / लागू नहीं <b>Details attached at Annexure – F2.10</b> विवरण अनुलग्नक - F2.10में संलग्न है। <b>(if applicable)</b> लागू / लागू नहीं			
15.	<b>List of out-sourced manufacturing processes with Sub-Vendors' names &amp; addresses</b> सब-वेंडर द्वारा बाह्य स्रोतों (उनके नाम और पते सहित)से करवाएं गए निर्माण प्रक्रियाओं की सूची	<b>Applicable / Not applicable</b> लागू / लागू नहीं  <b>Details attached at Annexure. –F2.11</b> विवरण अनुलग्नक - F2.10में संलग्न है। <b>(if applicable)</b> (यदि लागू हो)			
16.	<b>Supply reference list including recent supplies</b> नवीनतम आपूर्ति सहित आपूर्ति संदर्भ सूची	<b>Details attached at Annexure – F2.12</b> विवरण अनुलग्नक - F2.12 में संलग्न है। <b>(as per format given below)</b> ( नीचे दिए गए प्रारूप के अनुसार )			
<b>Project/ package</b> परियोजना /पैकेज	<b>Customer Name</b> ग्राहक का नाम	<b>Supplied Item (Type/Rating/Model /Capacity/Size etc)</b> आपूर्ति की गई वस्तु (प्रकार / रेटिंग / मॉडल / क्षमता / आकार आदि)	<b>PO ref no/date</b> पीओ संदर्भ सं. / तिथि	<b>Supplied Quantity</b> आपूर्ति की मात्रा	<b>Date of Supply</b> आपूर्ति की तारीख
17.	<b>Product satisfactory performance feedback letter/certificates/End User Feedback</b> उत्पाद के संतोषजनक प्रदर्शन संबंधी फीडबैक पत्र / प्रमाण पत्र / अंतिम उपयोगकर्ता फीडबैक	<b>Attached at annexure - F2.13</b> अनुलग्नक F2. 3पर संलग्न है			

