

**FRAMEWORK AGREEMENT FOR FGD FPS PROJECTS
Un-Priced Price Bid Format**

R00 -01.11.2021

Item: DELUGE VALVE
PR No: 1900141154

SI No	PR No	Material Code	Material Description	UOM	PR Qty (No.s)	Technical Specification	Price Weightage Factor	Bidder Confirmation (Quoted)
1	1900141154	PY9751796032	DELUGE VALVE - 150 NB	EA	36	PY51796	0.10472	
2	1900141154	PY9751796024	DELUGE VALVE - 100 NB	EA	345	PY51796	0.81926	
3	1900141154	PY9751796016	DELUGE VALVE - 80 NB	EA	18	PY51796	0.03101	
4	1900141154	PY9751415020	CLAPPER ASSEMBLY FOR 150 NB DV	EA	8	PY51415	0.00815	
5	1900141154	PY9751415039	CLAPPER ASSEMBLY FOR 100 NB DV	EA	40	PY51415	0.03325	
6	1900141154	PY9751415047	CLAPPER ASSEMBLY FOR 80 NB DV	EA	6	PY51415	0.00362	
Total							1.00000	

NOTES:

- 1) Vendor to Quote Lumpsum Price for the Total Package.
- 2) Line Item Rates of the individual items shall be derived by multiplying the "Price Weightage Factor" with the Lumpsum Price quoted.
- 3) Unit Rates of the Individual items thus arrived, shall be binding on the bidder, for the total period of Framework Agreement.
- 4) Observations / Objections, if any, of the Bidder, to the "Price Weightage Factor" shall be brought to the notice of BHEL, during Pre-Bid Stage.
- 5) No Observations / Objections shall be entertained after the Techno-Commercial Bid is opened.
- 6) Bidder to indicate "Quoted" in the column "Bidder's Confirmation" as a confirmation of their bid to the respective item.
- 7) The Bid Evaluation is on Overall L1 Basis. Each and Every item of the Package shall be quoted by the bidder.
- 8) Partial offers will not be considered for evaluation and the same are liable for rejection.
- 9) The details of the Projects for which Framework Agreement is proposed are given elsewhere in the NIT. The distribution of the line items across the projects is attached as **Annexure-A**.
- 10) The permissible ordering limits specified in NIT are strictly applicable on the Total Framework Value. The same are not applicable at the Individual Project level.
- 11) The Total Lump price quoted shall be INCLUSIVE of Freight, Packing & Forwarding and Testing Charges.
- 12) The Total Lump price quoted shall be EXCLUSIVE of GST, Third party inspection (TPI) & Insurance Charges.

DISTRIBUTION OF FRAMEWORK ITEMS ACROSS PROJECTS

Annexure-A to Price Bid Format

ITEM: DELUGE VALVE
PR NO 1900141154

SL NO	Material No	Material Desc	UOM	PMD No	UWT	KOTHAGUDEM	BHADRADRI	NORTH KARANPURA	BARH-1	BARH-2	MAUDA	BRBCL NABINAGAR	NPGCL NABINAGAR	RAMAGUNDAM	KORBA	NSPCL BILLAI	TUTICORIN	UDANGUDI	SAGARDIGHI	ENNORE	BHUSAWAL	YADADRI	PATRATU	PANKI	CONTINGENCY
1.0	PY9751796032	DELUGE VALVE - 150 NB	EA	PE.MP.559		1	1	0	1	1	1	0	0	0	0	1	1	22	7					16	
2.0	PY9751796024	DELUGE VALVE - 100 NB	EA	PE.MP.559		8	8	11	11	9	8	11	11	11	11	8	8	152	137				66	23	
3.0	PY9751796016	DELUGE VALVE - 80 NB	EA	PE.MP.559		0	0	0	0	0	0	0	0	0	0	0	0	10						10	5
4.0	PY9751415020	CLAPPER ASSEMBLY FOR 150 NB DV	SET	PE.MP.559		1	1	0	1	1	1	0	0	0	0	1	1	3	1						2
5.0	PY9751415039	CLAPPER ASSEMBLY FOR 100 NB DV	SET	PE.MP.559		1	1	2	2	1	1	2	2	2	2	1	1	16	14				7	3	
6.0	PY9751415047	CLAPPER ASSEMBLY FOR 80 NB DV	SET	PE.MP.559		0	0	0	0	0	0	0	0	0	0	0	0	1	0					2	5

1. The quantities indicated are total quantity with additional 50 % qty variation considered
2. The above list of Quantiy , project/customer is tentative only. Final details of quantity, Project/ Customer shall be informed at the time of PO
3. The Project/ Customer are subject to change based on buisness scenario of BHEL.

Bulk Procurement of DELUGE VALVE
Price Variation Formula – Deluge Valve
PVC-MS- DELUGE VALVE

$$PO = PA \times \left(\left[0.60 \times \frac{MO}{MA} \right] + \left[0.15 \times \frac{FO}{FA} \right] + \left[0.10 \times \frac{LO}{LA} \right] + 0.15 \right)$$

PO	Purchase Order Value, adjusted in accordance with above Price Variation Formula
PA	Purchase Order Value, as per Original Framework Agreement Price

Escalation for Raw Material:

MO	JPC Retail Market Price of “PIG IRON”, as on the date of respective Project PO Placement, <i>calculated as an Average of the Prices for Kolkata, Delhi, Mumbai, Chennai regions.</i>
MA	JPC Retail Market Price for “PIG IRON”, as on the date of Part-1 bid opening of Framework Agreement Tender, <i>calculated as an Average of the Prices for Kolkata, Delhi, Mumbai, Chennai regions.</i>
As published under the Item “ PIG IRON ” by Joint Plant Committee, Ministry of Steel, Govt of India, in their subscription based bimonthly publication “JPC MARKET PRICE RETAIL”.	

Escalation for Fuel & Power:

FO	Wholesale Price Index for “Fuel & Power”, as on the date of respective Project PO Placement
FA	Wholesale Price Index for “Fuel & Power”, as on the date of Part-1 bid opening of Framework Agreement Tender
As published under the Index “ II Fuel & Power ” by Office of the Economic Adviser, Ministry of Commerce and Industry, Govt of India, on their website www.eaindustry.nic.in	

Escalation for Labour:

LO	All-India Average Consumer Price Index Number for Industrial Workers (Base_2016=100), as on date of respective Project PO Placement
LA	All-India Average Consumer Price Index Number for Industrial Workers (Base_2016=100), as on the date of Part-1 bid opening of Framework Agreement Tender
As published by Labour Bureau, Ministry of Labour and Employment, Govt of India, on their website www.labourbureaunew.gov.in	

Overheads and Margin:

0.15	Constant for Overheads and Margin
------	-----------------------------------

NOTE: Latest Index Values, as published by respective agencies, **Available as on the date** of Part-1 bid opening of FA Tender / date of PO, shall be considered, for all the factors.

BULK PROCUREMENT OF GENERIC PIPING ITEMS
Pre-Qualification Criteria (Technical)

Package Name : DELUGE VALVE
PR No : 1900141154

Manufacturers of **DELUGE VALVE** qualified as per the Pre-qualification criteria laid down below, are allowed to bid. Documentary evidence shall be provided by such bidders to establish their claim. **However, offer consideration is subjected to approval from end Customer.**

The bid evaluation shall be on Overall L1 basis. The Bidder shall meet the Pre-Qualification Criteria (listed below.

Non-compliance to any of the criteria listed below will lead to disqualification of bidder for the subject item of the tender.

Qualification Criteria of the Bidder:

1. The bidder should be an established manufacturer of **Deluge valve** and should have successfully completed Manufacture, Supply of **Deluge valve**.
2. The Bidder should have successfully completed supply of **Deluge valve** for similar specification with a total minimum quantity of **315 No.s**(sizes 3", 4" & 6") through a single Purchase Order or multiple Purchase Orders in the last 5 years ending on original due date of this tender, with at least one order executed after 01.01.2019.
3. Detailed BOQ of the items supplied, satisfying the criteria laid down above, shall be provided in the format enclosed as Annexure-1, with details like Project & Customer, Description & Quantity of Items supplied, PO details etc. as a minimum for assessing pre-qualification. **PO Copies, Inspection Reports and Dispatch documents shall be enclosed for the references provided.**
4. The bidder should not have been under suspension for business or blacklisted by any of the BHEL units.

TTTD-106-1
Rev No. 5

Form No.



**PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD -32.**

PY51415

Rev No. 00

Page 1 of 5

COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED,
It must not be used directly or indirectly in any way detrimental to the interest of the company.

TECHNICAL SPECIFICATION
OF SPARES FOR FPS COMPONENTS

Revisions :	Prepared by:	Checked by:	Approved By:	Date
	-SD-	-SD-	-SD-	
00	Anupam/Sumant	Amit/PCS	MNSR	03.08.18



PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD –32.

PY51415

Rev No. 00

Page 2 of 5

1. SCOPE/INTENT:

1.1. This specification covers the spares to be offered for following items :

- Water monitor
- Deluge valve
- Hydrant valve
- Solenoid valve

1.2. The design, construction, dimension, material of these items shall be exactly same as supplied for the main equipment & shall be suitable for direct replacement without any modification/ alterations in the main equipment.

1.3. The supplier shall strictly comply with this standard in all respects. No deviation shall be allowed. However, bidder can raise technical queries on the specification during pre-bid stage and clarifications may be sought from BHEL before the bid submission.

APPLICATION:

These items suitable for fire protection systems (Water & Foam based protection system).

2. VARIANT TABLE:

Var. No.	Description	Material Code	Specification of Main item
1.	Nozzles of water monitor	PY9751415012	PY-51395
2.	Clapper assembly for 150 NB DV	PY9751415020	PY-51388
3.	Clapper assembly for 100 NB DV	PY9751415039	PY-51388
4.	Clapper assembly for 80 NB DV	PY9751415047	PY-51388
5.	Set of Seat & Rubber Ring of Hyd valve	PY9751415055	PY-51391
6.	Spindle with nuts of Hyd valve	PY9751415063	PY-51391
7.	Bonnet,gland nut,rubber assy of Hyd vlv	PY9751415071	PY-51391
8.	Seat,check nut,washer assy of Hyd valve	PY9751415080	PY-51391
9.	Rubber washer for female coupling	PY9751415098	PY-51391
10.	Female coupling assy for hyd Vlv	PY9751415101	PY-51391

COPYRIGHT AND CONFIDENTIAL

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



PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD –32.

PY51415

Rev No. 00

Page 3 of 5

11.	Lock pin assembly for hydrant valve	PY9751415110	PY-51391
12.	Coil for Solenoid Valve	PY9751415128	PY-51410
13.	Plunger for Solenoid Valve	PY9751415136	PY-51410
14.	Seat for Solenoid Valve	PY9751415144	PY-51410
15.	Gaskets for Solenoid Valve	PY9751415152	PY-51410
16.	O ring set for Solenoid Valve	PY9751415160	PY-51410

Note: Bidder to quote as per Material Code as mentioned in the Enquiry.

3. TECHNICAL REQUIREMENTS:

Technical Requirements shall be as per the Specification for Main items.

4. PAINTING

As per manufacturer standard practice.

5. INSPECTION AND TESTING

As per BHEL QAP (Refer attached Annexure)

6. DOCUMENTATION:

6.1. Along with the offer:

Signed and stamped copy of this specification as token of acceptance of the specification for execution in the event of Order.

6.2. After PO Placement:

Two copies each of the following documents shall be submitted for approval.

- G.A. Drawings with weights and dimensions
- Technical Data sheets, Catalogue
- Material specification details
- Tests to be conducted
- O&M manuals
- Storage/Preservation instructions for at least three years.

Final documentation consisting of above documents shall be submitted in requisite sets (to be decided post order) of hard and soft copies.

Schedule for document submissions:

COPYRIGHT AND CONFIDENTIAL

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



PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD –32.

PY51415

Rev No. 00

Page 4 of 5

S.no	Description	Schedule
1	Submission of GA drawing & Technical Datasheet by vendor	7 days from the date of P.O.
2	Approval GA drawing & Technical Datasheet by BHEL	14 days from receipt of the document*

* The GA drawing & Technical Datasheet submitted by vendor shall be strictly in compliance to all applicable standards and specification.

7. PRESERVATION, PACKING & MARKING OR PACKING CASE:

- 7.1.** A suitable temporary rust preventive with minimum life of two years shall be applied inside the item/equipment body in order to prevent corrosion.
- 7.2.** All the item / equipment shall be packed suitably in closed wooden cases in order to avoid damage during transit and storage at BHEL. Suitable supports shall be provided inside the cases in order to avoid internal movement. In case of exported consignments, the packing shall be seaworthy (Refer enclosed Annexure for Export Packing guidelines, AA 0490009, Rev-01).


Each item / equipment after end protection should be wrapped in polythene sheet before packing in the cases.

Each packing case must contain two copies of the shipping list giving details of all the contents of the case.

- 7.3.** The following marking shall be done on each packing case minimum on two sides and at the top.
- Complete address of the consignee and destination as per BHEL Purchase Order.
 - BHEL Purchase order Number
 - BHEL item Material Code
 - Number of pieces in each packing case
 - Net Weight
 - Gross Weight
 - Packing case number and total number of packing
 - Arrow indicating top of the packing case.

COPYRIGHT AND CONFIDENTIAL

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

TD-106-3	Rev No. 5	Form No.	 <p style="text-align: center;">PRODUCT STANDARD BHEL, HYDERABAD –32. PROJECT ENGINEERING & SYSTEM DIVISION</p>	PY51415							
<p style="text-align: center;">RECORD OF REVISIONS</p>				Rev No. 00							
				Page 5 of 5							
<p style="text-align: center;">COPYRIGHT AND CONFIDENTIAL</p> <p>The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>			Rev. No.	Date	Revision Details	Revised By	Checked By	Approved By			
			00	06.08.2018	First Issue	-SD-	-SD-	-SD-			
			Ref. Doc.								



COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED,
It must not be used directly or indirectly in any way detrimental to the interest of the company.

TECHNICAL SPECIFICATION
FOR DELUGE VALVE

Revisions :	Prepared by:	Checked by:	Approved By:	Date
		-SD-	-SD-	
00	SUMANT	UDAY G	SRIKANTH G	20.10.21



PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD –32.

PY51796

Rev No. 00

Page 2 of 7

1. SCOPE/INTENT:

- 1.1. This specification covers the technical requirements of constructional features, accessories, inspection, tests, test certificates, documentation, preservation, packing and forwarding of Deluge Valve.
- 1.2. Scope of supply shall include design, manufacture, inspection, shop testing, shop painting, packing and delivery.
- 1.3. The supplier shall strictly comply with this standard in all respects. No deviation shall be allowed. However, bidder can raise technical queries on the specification during pre-bid stage and clarifications may be sought from BHEL before the bid submission.

APPLICATION:

These valves suitable for fire protection systems (Water based protection system).

2. VARIANT TABLE:

Var. No.	Description	Material Code
01	Deluge Valve - 80 NB	PY9751796016
02	Deluge Valve - 100 NB	PY9751796024
03	Deluge Valve - 150 NB	PY9751796032

Note: Bidder to quote as per Material Code as mentioned in the Enquiry.

3. TECHNICAL REQUIREMENTS:

Sl. No.	Requirements	Compliance
3.1	Material of construction	
3.1.1	Body	Cast Iron IS:210 Gr. FG 260 / ASTM A48 or Carbon Steel (ASTM A 216 GR. WCB)
3.1.2	Valve Internal (such as seat , clappers , clamps , clamp rings)	Brass / Bronze / SS
3.1.3	Bolts (Internal)	SS
3.1.4	Bolts (External)	Carbon Steel
3.2	Approval	UL listed
3.3	End Connection	Flange drilling matching to ANSI B 16.5 #150
3.4	Type	Wet Trim, Differential pressure, Quick release, Diaphragm and with clapper assembly

COPYRIGHT AND CONFIDENTIAL

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



PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD –32.

PY51796

Rev No. 00

Page 3 of 7

COPYRIGHT AND CONFIDENTIAL

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

3.5	Trim Description	<ul style="list-style-type: none"> (1) Wet pilot trim (2) Electrical release trim (3) Test & Alarm trim (4) Drain valve (5) Priming connection (6) Drip check valve (7) Emergency release valve
3.6	Working Pressure	10.5 kg/cm ² (g) to 12.5 kg/cm ² (g)
3.7	Design Pressure	17.5 kg/cm ² (g)
3.8	Hydro Test Pressure	25 kg/cm ² (g)
3.9	Seat Pressure	18 kg/cm ² (g)
3.10	Accessories to be provided along with DV	<ul style="list-style-type: none"> (1) Test Strainer, Drain Valve & NRV (2) Water Motor Gong (3) Instruments such as Pressure Gauge (both upstream and downstream of DV) (4) Provision for Solenoid valve mounting – All fittings required for mounting of SOV on DV Trim shall be part of bidder's scope (5) Globe valves (including instrument globe valves) (6) Ball valves (7) Emergency release (8) GI piping (9) Priming arrangement connection such GI pipe & fittings etc. between Deluge valve inlet line to deluge valve are included/ considered by bidder in their offer. (Apprx. pipe length shall be 2 meters) (10) Pressure switch as required is not part of bidders scope, however necessary provision (like penetration with necessary threading or weldolet) for mounting pressure switch shall be provided by bidder on deluge valve trim piping
3.11	Marking on Equipment	Mfg. Trade Name, Year of Mfg., Serial No., Size & Model, 'UL' Listed Mark



4. PAINTING

As per manufacturer Standard practice or as detailed below whichever is superior in quality. In such case, Purchaser's view shall be binding.

Paint Scheme	Total DFT
Primer: Zinc filled Epoxy	Minimum 300 Microns
Intermediate: Epoxy MIO	
Final: Aliphatic Polyurethane	

Final shade of the paints shall be informed after post order.


5. INSPECTION AND TESTING

- 5.1. Bidder shall maintain an effective Quality Assurance System to ensure that all equipment and material supplied meets high Quality standards.
- 5.2. After award of contract, bidder shall submit Quality Plan for BHEL's approval.
- 5.3. Bidder to note that all the cost involved in any of the inspection & testing requirements as per the approved quality plan shall be included in the basic price quoted by the bidder. Bidder shall not be eligible to raise any extra claim on account of any inspection & testing of the complete Deluge Valve as per the approved quality plan.
- 5.4. The following are the minimum tests to be conducted on the Deluge Valve:
 - i. Dimension & Visual test
 - ii. Hydro test
 - iii. Seat Leak Test
 - iv. Performance cum functional Test
 - v. Painting & Marking
 - vi. Material test certificate review

Any other test as mentioned in approved Quality Assurance Plan shall be complied by the bidder.

5.5. Inspection

- i. Bidder shall notify in writing to BHEL, at least two weeks (Ten working days) in advance of the date and the place at which the items will be ready for witnessing of inspection / testing. In case any postponement becomes necessary, the CONTRACTOR shall provide written notification at least 3 days prior to the original scheduled date.

TD-106-2 Rev No. 5	Form No.		<p align="center">PROJECT ENGINEERING & SYSTEM DIVISION BHEL, HYDERABAD –32.</p>	PY51796
				Rev No. 00
				Page 5 of 7
<p align="center">COPYRIGHT AND CONFIDENTIAL</p> <p>The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED. It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>		<p>ii. Bidder after satisfying that all inspection requirements as per approved ITP and applicable specifications / documents have been taken care by TPIA, shall submit copy of the Inspection Certificate and all Quality control records to Purchaser in requisite copies along with Statutory Certificates if any, duly endorsed by their Quality Control Manager.</p> <p>iii. In case non-conformity is noted, 100% of the lot shall be checked by TPIA and all the non-confirming materials shall be replaced by the bidder.</p> <p>5.6. Inspection Certificate</p> <p>i. Bidder shall submit, copy of each Inspection Certificate (IC) / Inspection Release Note (IRN) issued by TPIA, along with all attachments mentioned therein.</p> <p>5.7. Inspection agency:</p> <p>i. Purchaser / Third Party appointed by purchaser</p> <p>ii. The inspection agency shall be indicated in the quality plan and shall be as per the approved quality plan.</p> <p>6. DOCUMENTATION:</p> <p>6.1. Along with the offer:</p> <p>Signed and stamped copy of this specification as token of acceptance of the specification for execution in the event of Order.</p> <p>6.2. After PO Placement:</p> <p>Two copies each of the following documents shall be submitted for approval.</p> <ul style="list-style-type: none"> ● G.A. Drawings with weights and dimensions ● Technical Data sheets, Catalogue ● Material specification details ● Tests to be conducted ● O&M manuals ● Storage/Preservation instructions for at least three years. <p>Final documentation consisting of above documents shall be submitted in requisite sets (to be decided post order) of hard and soft copies.</p> <p>Schedule for document submissions:</p>		
Ref.	Doc.			



PROJECT ENGINEERING & SYSTEM DIVISION
BHEL, HYDERABAD –32.

PY51796

Rev No. 00

Page 6 of 7

S.no	Description	Schedule
1	Submission of GA drawing & Technical Datasheet by vendor	7 days from the date of P.O.
2	Approval GA drawing & Technical Datasheet by BHEL	14 days from receipt of the document*

* The GA drawing & Technical Datasheet submitted by vendor shall be strictly in compliance to all applicable standards and specification.

7. PRESERVATION, PACKING & MARKING OR PACKING CASE:

- 7.1. A suitable temporary rust preventive with minimum life of two years shall be applied inside the item/equipment body in order to prevent corrosion.
- 7.2. All the item / equipment shall be packed suitably in closed wooden cases in order to avoid damage during transit and storage at BHEL. Suitable supports shall be provided inside the cases in order to avoid internal movement. In case of exported consignments, the packing shall be seaworthy (Refer enclosed Annexure for Export Packing guidelines, AA 0490009, Rev-01).


Each item / equipment after end protection should be wrapped in polythene sheet before packing in the cases.

Each packing case must contain two copies of the shipping list giving details of all the contents of the case.

- 7.3. The following marking shall be done on each packing case minimum on two sides and at the top.
- Complete address of the consignee and destination as per BHEL Purchase Order.
 - BHEL Purchase order Number
 - BHEL item Material Code
 - Number of pieces in each packing case
 - Net Weight
 - Gross Weight
 - Packing case number and total number of packing
 - Arrow indicating top of the packing case.

COPYRIGHT AND CONFIDENTIAL

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

TD-106-3	Rev No. 5	Form No.	 <p style="text-align: center;">PRODUCT STANDARD BHEL, HYDERABAD –32. PROJECT ENGINEERING & SYSTEM DIVISION</p>	PY51xxx							
<p style="text-align: center;">RECORD OF REVISIONS</p>				Rev No. 00							
				Page 7 of 7							
<p style="text-align: center;">COPYRIGHT AND CONFIDENTIAL</p> <p>The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>			Rev. No.	Date	Revision Details	Revised By	Checked By	Approved By			
			00	20.10.2021	First Issue	-SD-	-SD-	-SD-			
			Ref. Doc.								

VENDOR'S NAME & ADDRESS:		MANUFACTURING QUALITY PLAN							QP. NO.:			
		CUSTOMER: BHEL, HYDERABAD – 32.				BHEL P.O.NO.:			REV NO:		DATE:	
		PROJECT:				P.O. DATE:			PAGE 1 OF 3			
		PRODUCT:				BHEL SPEC:			REV:			

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
1.1	BODY & COVER (C.I. CASTINGS)	i) MECHANICAL TEST & CHEMICAL TEST	MAJOR	TENSILE & CHEMICAL ANALYSIS	ONE (1) PER HEAT	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	LAB/MFG. TC	√	2	--	1	
		ii) DIMENSION	MAJOR	MEASUREMENT	AT RANDOM (TWO) PER HEAT	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	IR		2	2	1	
		iii) PHYSICAL OBSVN.	MAJOR	VISUAL	100%	SURFACE FREE FROM HARMFUL DEFECTS	SURFACE FREE FROM HARMFUL DEFECTS	IR		2	2	1	
1.2	CLAPPER, SEAT & CLAMPS (GM CASTINGS)	i) MECHANICAL TEST & CHEMICAL TEST	MAJOR	TENSILE & CHEMICAL ANALYSIS	ONE (1) PER HEAT	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	LAB/MFG. TC	√	2	--	1	
		ii) DIMENSION	MAJOR	MEASUREMENT	AT RANDOM (TWO) PER HEAT	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	IR		2	2	1	
		iii) PHYSICAL OBSVN.	MAJOR	VISUAL	100%	SURFACE FREE FROM HARMFUL DEFECTS	SURFACE FREE FROM HARMFUL DEFECTS	IR		2	2	1	
1.3	SEAT, RUBBER & DIAPHRAGM	i) MECHANICAL	MAJOR	UTS	ONE (1) PER HEAT	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	LAB/MFG. TC	√	2	--	1	

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL/BHEL NOMINATED TPIA & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

VENDOR'S NAME & ADDRESS:		MANUFACTURING QUALITY PLAN							QP. NO.:		
		CUSTOMER: BHEL, HYDERABAD – 32.				BHEL P.O.NO.:			REV NO:	DATE:	
		PROJECT:				P.O. DATE:			PAGE 2 OF 3		
		PRODUCT:				BHEL SPEC:			REV:		

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
		ii) POLYMER TEST	MAJOR	CHEMICAL TEST & FTIR GRAPH	ONE (1) PER HEAT	NEOPRENE RUBBER	NEOPRENE RUBBER	LAB/MFG. TC	√	2	--	1	
2.0	INPROCESS INSPECTION												
2.1	BODY, COVER CLAPPER CLAMPS, SEAT (DURING MACHINING)	i) PHYSICAL OBSVN. DIMN. CHECK	MAJOR	VISUAL & MEASUREMENT	100%	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	IR		2	2	1	
2.2	BODY, COVER CLAPPER CLAMPS, SEAT (AFTER FINAL MACHINING)	l) PHYSICAL OBSVN. DIMN. CHECK	MAJOR	VISUAL & MEASUREMENT	100%	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	IR		2	2	1	
2.3	BODY & COVER	l) HYDRO TEST	MAJOR	LEAK PROOF TEST	100%	25 KG/CM ² FOR 5 MINS.	NO LEAKAGE	IR	√	2	1		
2.4	BODY & COVER	l) SURFACE CLEANING	MAJOR	PRESSURE TEST, DRESSING/GROUNDING/FILING	100%	FREE FROM SURFACE DEFECTS	FREE FROM SURFACE DEFECTS	IR	√	2	2	1	
3.0	FINAL INSPECTION & TESTING												
3.1	DELUGE VALVE (COMPLETE ASSEMBLY)	l) PHYSICAL OBSVN. DIMN. CHECK	MAJOR	VISUAL & MEASUREMENT	100% FOR 2 & 10% FOR 1	APP TDS/DRG./SPEC.	APP TDS/DRG./SPEC.	IR	√	2	1	-	

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL/BHEL NOMINATED TPIA & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

VENDOR'S NAME & ADDRESS:		MANUFACTURING QUALITY PLAN							QP. NO.:					
		CUSTOMER: BHEL, HYDERABAD – 32.			BHEL P.O.NO.:				REV NO:		DATE:			
		PROJECT:			P.O. DATE:				PAGE 3 OF 3					
		PRODUCT:			BHEL SPEC:				REV:					
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS	
										P	W	V		
		II) SEAT LEAK TEST	MAJOR	HYDRO TEST (SEAT)	100% FOR 2 & 10% FOR 1	APP TDS/DRG./ SPEC.	NO LEAKAGE	IR	√	2	1	-		
		III) PERFORMANCE CUM FUNCTIONAL CHECK	CRITICAL	PERFORMANCE TEST	100% FOR 2 & 10% FOR 1	APP TDS/DRG./ SPEC.	APP TDS/DRG./ SPEC.	IR	√	2	1	-		
4.0	PRESERVATION & PACKING													
4.1	DV. ASSY. (PAINTED)	PAINTING & MARKING	MAJOR	VISUAL	100%	APP TDS/DRG./ SPEC.	APP TDS/DRG./ SPEC.	IR	√	2	2	1		
4.2		PROPERLY PACKING WITH NECESSARY MARKING	MAJOR	VISUAL	100%	APP TDS/DRG./ SPEC.	APP TDS/DRG./ SPEC.	PACKING REPORT			2	2	1	
4.3		PRESERVATION MUST BE MAINTAINED AT PROPER PLACE	MAJOR	VISUAL	100%	APP TDS/DRG./ SPEC.	APP TDS/DRG./ SPEC.	PACKING REPORT			2	2	1	

1. ALL LAB REPORTS SHALL BE FROM NABL ACCREDITED LAB.

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL/BHEL NOMINATED TPIA & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP



QAP GUIDELINES & FORMAT

(ANNEXURE)


The QAP format and guidelines for filling up the format shall be used by vendor for preparation and submission of QAP after order placement.


Note:

1. Typical /Indicative /Standard QAP(s) for equipment /package attached is reference document and to use by successful bidder in future for preparation and submission of QAP for BHEL /CUSTOMER approval.
2. No deviation to reference document is acceptable.

COPYRIGHT AND CONFIDENTIAL

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

Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE Rev No. 00 Page 2 of 3
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.	<u>GUIDELINES TO VENDORS FOR PREPARATION OF QUALITY ASSURANCE PLAN</u>		
Ref. Doc	<ol style="list-style-type: none"> 1. QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10. 2. Each page of QAP shall contain the following information. <ol style="list-style-type: none"> a) Vendor's name & address. b) Customer: BHEL, Hyderabad. c) Project. d) BHEL Product Standard Number/revision number as referred in P.O. e) BHEL Purchase Order Number & Date. f) Product as per P.O. description. g) QAP Number (unique and shall not repeat)/revision number/date. h) Page number and number of pages 3. QAP shall contain four parts / stages as follows. <ol style="list-style-type: none"> a) Raw materials and bought out items. b) In process Control / Inspection. c) Final assembly, Inspection & Testing. d) Painting, preservation & packing. 4. Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc). 5. Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT, DP etc.), hydrostatic test, calibration check etc.) 6. Under 'Class', indicate minor, major or critical depending on the importance of characteristic. 7. Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.) 8. Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.) 9. Under 'Reference document' and 'Acceptance norms', appropriate National & International standards, BHEL standards, approved drawing references etc. should be indicated. It is not correct to mention as "Vendor's internal standards or Vendor's standard practice etc.". If vendors' internal standards are referred, same shall be in line with BHEL Spec. indicated in the P.O. These may require review & approval by our Engineering dept. 10. Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc. 11. Please refer 'Agency' in QAP format. Under P: Perform, W: Witness, V: Verify Indicate against each characteristic 1: (BHEL CQS/Nominated inspection agency), OR 2: (Vendor / Sub vendor) 		

	Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE Rev No. 00 Page 3 of 3
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED . It must not be used directly or indirectly in any way detrimental to the interest of the company.		<p>Note: Performing agency is normally vendor or his sub vendor (Legend 2). Where witness points are indicated in specification, P.O., Drawing etc., for such operations, Under Witness (W) column use 1. Under 'Verify' column, use code1.</p> <p>12. Under 'D' please put (<input type="checkbox"/> Tick) against each characteristic where vendor proposes to submit test certificate/report etc. OR as required as per BHEL Specification.</p> <p>13. Vendor's signature & stamp should be available on each page of QAP.</p> <p>14. Vendor should read the BHEL Product Standard thoroughly and QAP should be made only inline and relevant to the Specification & Approved Drawings.</p> <p>15. The following operations/characteristics/check points may be included (AS APPROPRIATE)</p> <ol style="list-style-type: none"> a) Visual check b) Dimensional check c) Mechanical and Chemical properties. d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.) e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc. f) Check for correctness for all components mounted as per General Arrangement Drawing, Bill of Materials (BOM), etc. for range, rating, make, color, size, location as per GA, quantity, label description including tag nos., annunciator facia, loose components, accessories, spares etc. g) Verification of test certificate for protection class for the enclosures. h) Mechanical functioning of switches. i) Continuity of earthing and provision of earth points. j) Colour coding of wiring, size, tightness & dressing of wiring. k) Review of test certificates of assembled items, raw materials, internal test reports etc. l) Witness of functional checks, which may include mechanical run & electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc. m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc. n) Material identification (for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.) o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non-Destructive Tests. p) Tests on Galvanised items (Visual, Hammer Test, Knife Test, Thickness, Pierce Test (Copper sulphate test), Hydrogen evaluation test, Stripping test (for Mass of Zinc coating) q) All tests as per BHEL Product Standard & approved drawings including Type tests and Routine tests on individual items and on System as a whole. r) Packing and Preservation. <p>16. QAP Format enclosed.</p>		
	Ref. Doc			



**PROJECT ENGINEERING & SYSTEMS DIVISION
RC PURAM, HYDERABAD.
QUALITY & BUSINESS EXCELLENCE**

INSPECTION / TC REVIEW FORMAT

1	Vendor's Name:		5	Applicable BHEL Spec No:	
2	Project:		6	Approved Drawing No:	
3	PO No:		7	Approved Data Sheet No:	
4	Item Description:		8	Approved QAP No:	

OFFER LIST

S.No	BBU/ PO Sr. No.	Item Description	Total Qty as per PO/BBU	Qty. already accepted	Qty offered for TC review	Cumulative Qty	Balance Qty
A							
B							
C							
D							

TC REVIEW REQUISITION

BBU / PO Sr. No.	QAP Clause No.	Format of Record	Certificate No. & Date	Page No.	REMARKS
A. Item Description:					
B. Item Description:					
C. Item Description:					
D. Item Description:					
E. Item Description:					

SUPPLIER / VENDOR SIGNATURE WITH SEAL

BHEL/ BHEL's TPIA SIGNATURE WITH SEAL

Dt:

Dt: