



TTTD-106-1 Rev No. 5  Form No.		PROJECT ENGINEERING & SYSTEM DIVISION BHEL, HYDERABAD –32.			PY51395					
					Rev No. 01					
					Page 1 of 6					
<div>COPYRIGHT AND CONFIDENTIAL</div> <div>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.</div> <div>TECHNICAL SPECIFICATION FOR WATER MONITOR</div>										
					Revisions :		Prepared by:	Checked by:	Approved By:	Date
							-SD-	-SD-	-SD-	
					00	Sumant	Amit/PCS	MNSR	25.07.2018	

TD-106-2 Rev No. 5  Form No.		<b>PROJECT ENGINEERING &amp; SYSTEM DIVISION</b> <b>BHEL, HYDERABAD –32.</b>	<b>PY51395</b>
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**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 Water Monitor.

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


**2. VARIANT TABLE:**


Var. No.	Description	Material Code
01	75mm Water Monitor (ISI Approved)	PY9751395011
02	75mm Water Monitor (FM Approved)	PY9751395020


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	Base Flange	CS Seamless
3.1.2	Reducer	CS Seamless
3.1.3	Water Barrel	Hot Dip Galvanized CS
3.1.4	Water Nozzle	SS 304
3.1.5	Drain Valve	Leaded Tin Bronze as per IS 778
3.1.6	Swivel Joints (Horizontal & Vertical)	SS 304
3.1.7	(Horizontal & Vertical) Rotation Lock	SS 304
3.1.8	Grease Nipple	SS 304 or Brass (shall be informed based on requirement)
	All steel components subject to direct contact water contact shall be hot dip galvanized after fabrication to a minimum thickness of 0.03mm.	
3.2	End connection	4 " Flanged (FF) and drilled to ANSI 150# B 13.5

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<b>COPYRIGHT AND CONFIDENTIAL</b> 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.	<table border="1"> <tr> <td>3.3</td> <td>Size</td> <td>75 mm</td> </tr> <tr> <td>3.4</td> <td>Approval</td> <td>ISI Approved</td> </tr> <tr> <td>3.5</td> <td>Code/Standard</td> <td>IS 8442 for ISI approved</td> </tr> <tr> <td>3.6</td> <td>Type</td> <td>Fixed, Horizontal and vertical swivel type</td> </tr> <tr> <td>3.7</td> <td>Flow</td> <td>2500-2700 litre/min at 7 Kg/Sq.cm</td> </tr> <tr> <td>3.8</td> <td>Rotation of body</td> <td></td> </tr> <tr> <td>3.8.1</td> <td>Horizontal</td> <td>360°</td> </tr> <tr> <td>3.8.2</td> <td>Vertical</td> <td>+ 90° above horizontal, - 45° below horizontal</td> </tr> <tr> <td>3.9</td> <td>Throw of Monitors</td> <td></td> </tr> <tr> <td>3.9.1</td> <td>Horizontal</td> <td>60 M</td> </tr> <tr> <td>3.9.2</td> <td>Vertical</td> <td>25 - 30 M</td> </tr> <tr> <td>3.10</td> <td>Pressure</td> <td></td> </tr> <tr> <td>3.10.1</td> <td>Working Pressure</td> <td>10.5 kg/cm<sup>2</sup>(g)</td> </tr> <tr> <td>3.10.2</td> <td>Design Pressure</td> <td>15.0 kg/cm<sup>2</sup>(g)</td> </tr> <tr> <td>3.10.3</td> <td>Hydro test Pressure</td> <td>23 kg/cm<sup>2</sup>(g) for 5 minutes for the entire assembly and there shall not be any leakage</td> </tr> <tr> <td>3.11</td> <td>Marking on Equipment</td> <td>Mfg. Trade Name, Year of Mfg., Size &amp; Model, Flow &amp; Pressure</td> </tr> </table>				3.3	Size	75 mm	3.4	Approval	ISI Approved	3.5	Code/Standard	IS 8442 for ISI approved	3.6	Type	Fixed, Horizontal and vertical swivel type	3.7	Flow	2500-2700 litre/min at 7 Kg/Sq.cm	3.8	Rotation of body		3.8.1	Horizontal	360°	3.8.2	Vertical	+ 90° above horizontal, - 45° below horizontal	3.9	Throw of Monitors		3.9.1	Horizontal	60 M	3.9.2	Vertical	25 - 30 M	3.10	Pressure		3.10.1	Working Pressure	10.5 kg/cm <sup>2</sup> (g)	3.10.2	Design Pressure	15.0 kg/cm <sup>2</sup> (g)	3.10.3	Hydro test Pressure	23 kg/cm <sup>2</sup> (g) for 5 minutes for the entire assembly and there shall not be any leakage	3.11	Marking on Equipment	Mfg. Trade Name, Year of Mfg., Size & Model, Flow & Pressure
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	<b>4. PAINTING</b> Tentative Painting details are as per the below table. However, Final painting details and final color shade shall be provided to Bidder after placement of PO.																																																			
<table border="1"> <tr> <th>Paint Scheme</th> <th>Total DFT</th> </tr> <tr> <td>Primer: Zinc filled Epoxy</td> <td rowspan="3">Minimum 200 Microns</td> </tr> <tr> <td>Intermediate: Epoxy MIO</td> </tr> <tr> <td>Final: Aliphatic Polyurethane</td> </tr> </table>				Paint Scheme	Total DFT	Primer: Zinc filled Epoxy	Minimum 200 Microns	Intermediate: Epoxy MIO	Final: Aliphatic Polyurethane																																											
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Final shade of the paints shall be informed after post order.																																																				
<b>5. INSPECTION AND TESTING</b> As per BHEL QAP (Refer attached Annexure)																																																				
<b>6. DOCUMENTATION:</b>																																																				
<b>6.1. Along with the offer:</b> Signed and stamped copy of this specification as token of acceptance of the specification for execution in the event of Order.																																																				
<b>6.2. After PO Placement:</b>																																																				

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<b>COPYRIGHT AND CONFIDENTIAL</b> 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>Two copies each of the following documents shall be submitted for approval.</p> <ul style="list-style-type: none"> <li>• G.A. Drawings with weights and dimensions</li> <li>• Technical Data sheets, Catalogue</li> <li>• material specification details</li> <li>• tests to be conducted</li> <li>• O&amp;M manuals</li> <li>• Storage/Preservation instructions for at least three years.</li> </ul> <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> <table border="1"> <thead> <tr> <th>S.no</th> <th>Description</th> <th>Schedule</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Submission of GA drawing &amp; Technical Datasheet by vendor</td> <td>7 days from the date of P.O.</td> </tr> <tr> <td>2</td> <td>Approval GA drawing &amp; Technical Datasheet by BHEL</td> <td>14 days from receipt of the document*</td> </tr> </tbody> </table> <p>* The GA drawing &amp; Technical Datasheet submitted by vendor shall be strictly in compliance to all applicable standards and specification.</p> <p><b>7. PRESERVATION, PACKING &amp; MARKING OR PACKING CASE:</b></p> <p>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.</p> <p>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).</p> <p>Each item / equipment after end protection should be wrapped in polythene sheet before packing in the cases.</p> <p>Each packing case must contain two copies of the shipping list giving details of all the contents of the case.</p> <p>7.3. The following marking shall be done on each packing case minimum on two sides and at the top.</p> <p>(a) Complete address of the consignee and destination as per BHEL Purchase Order.</p> <p>(b) BHEL Purchase order Number</p> <p>(c) BHEL item Material Code</p>			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*
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Ref. Doc												

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Ref. Doc.	<div><p><b>COPYRIGHT AND CONFIDENTIAL</b></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></div> <div><p>(d) Number of pieces in each packing case</p><p>(e) Net Weight</p><p>(f) Gross Weight</p><p>(g) Packing case number and total number of packings</p><p>(h) Arrow indicating top of the packing case.</p></div>			

TD-106-3	Rev No. 5	Form No.		PRODUCT STANDARD BHEL, HYDERABAD –32. PROJECT ENGINEERING & SYSTEM DIVISION			PY51395	
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<p><b>COPYRIGHT AND CONFIDENTIAL</b></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>			RECORD OF REVISIONS					
			Rev. No.	Date	Revision Details	Revised By	Checked By	Approved By
			00	25.07.2018	First Issue	-SD-	-SD-	-SD-
			01	24.02.2020	MOC details are updated	Anupam/ Sumant/ Harish	Amit/ Kamaluddin	PCS
			Ref. Doc.					

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

Item: WATER MONITOR  
PR No: 1900142862

SI No	PR No	Material Code	Material Description	UOM	PR Qty (No.s)	Technical Specification	Price Weightage Factor	Bidder Confirmation (Quoted)
1	1900142862	PY9751395011	75MM WATER MONITOR (ISI)	EA	117	PY51395	0.98064	
2	1900142862	PY9751415012	NOZZLES OF WATER MONITOR	EA	12	PY51395	0.01936	
<b>Total</b>							<b>1.00000</b>	

**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  
ITEM: WATER MONITOR  
PR NO 1900142862

Annexure-A to Price Bid Format

SL NO	Material No	Material Desc	UOM	PMD No	UWT	KOTHAGUDEM	BHADRADRI	NORTH KARANPURA	BARH-1	BARH-2	MAUDA	BRBCL NABINAGAR	NPGL NABINAGAR	RAMAGUNDAM	KORBA	NSPCL BILLAI	TUTICORIN	UDANGUDI	SAGARDIGHI	ENNORE	BHUSAWAL	YADADRI	PATRATU	PANKI	CONTINGENCY
1.00	PY9751395011	75MM WATER MONITOR (ISI)	EA	PE.MP.571		5	5	6	6	6	6	6	6	6	6	6	5	45	22			17	13		
2.00	PY9751415012	NOZZLES OF WATER MONITOR	EA	PE.MP.571														5							12

- 1.The quantities indicated are distribution of items over various projects.
- 2. PO will be placed based on our customer clearances for various projects. Vendor to quote the price based on quantity indicated in unpriced format only.
- 3. The above list of Quantiy , project/customer is tentative only. Final details of quantity, Project/ Customer shall be informed at the time of PO
- 4. The Project/ Customer are subject to change based on buisness scenario of BHEL.



**Bulk Procurement of WATER MONITOR**  
**Price Variation Formula – Water monitor**  
**PVC-MS- WATER MONITOR**

$$PO = PA \times \left( \left[ 0.65 \times \frac{MO}{MA} \right] + \left[ 0.20 \times \frac{LO}{LA} \right] + 0.15 \right)$$

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 “ <b>PIG IRON</b> ” by Joint Plant Committee, Ministry of Steel, Govt of India, in their subscription based bimonthly publication “JPC MARKET PRICE RETAIL”.	

**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 <a href="http://www.labourbureau.gov.in">www.labourbureau.gov.in</a>	

**Overheads and Margin:**

0.15	Constant for Overheads and Margin
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**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.

**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:**

		MANUFACTURING QUALITY PLAN						MQP. NO.: SMQP/FPS/20/092013					
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: WATER MONITOR			REV NO: 00		DATE: 01/09/2013			
								PAGE 1 OF 3					
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
	BASE FLANGE	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
		DIMENSIONS	MAJOR	MEASUREMENT	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
	ELBOW	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
		DIMENSIONS	MAJOR	MEASUREMENT	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
	SWIVEL JOINTS	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
	NOZZLE	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
	WATER BARREL	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	


LEGEND: P: PERFORM, W: WITNESS, V: TEST CERTIFICATE REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY/END USER/END USER'S REPRESENTATIVE & 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
	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)


		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/20/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: WATER MONITOR		REV NO: 00		DATE: 01/09/2013				
							PAGE 2 OF 3						
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
	DRAIN VALVE	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
	ROTATION LOCK	MECHANICAL & CHEMICAL	MAJOR	TENSIL & CHEMICAL	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
	REDUCER	MECHANICAL & CHEMICAL	MAJOR	OEM's certificate review	ONE PER Lot	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2		1	
2.0	FINAL INSPECTION & TESTING												
	SWIVEL JOINTS & NOZZLE	DIMENSIONS	MAJOR	MEASUREMENT	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		
		WPS/PQR/WPQ & PENETRANT TEST ON WELDS	MAJOR	REVIEW	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		
		HYDRO TEST	MAJOR	HYDRO TEST	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		
		PERFORMANCE	MAJOR	WATER FLOW & WATER REACH	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		


LEGEND: P: PERFORM, W: WITNESS, V: TEST CERTIFICATE REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY/END USER/END USER'S REPRESENTATIVE & 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
	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

		<b>MANUFACTURING QUALITY PLAN</b>						MQP. NO.: SMQP/FPS/20/092013					
								REV NO: 00		DATE: 01/09/2013			
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT: WATER MONITOR				PAGE 3 OF 3			
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
	IDENTIFICATION	MARKING & STAMPING	MAJOR	VERIFICATION & STAMPING	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		
	PAINTING	FINAL FINISH & PAINT DFT	MAJOR	VISUAL & MEASUREMENT	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		
	PACKING	SOUNDNESS OF PACKING, LOADING e.t.c.	MAJOR	VERIFICATION	100%	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	AS PER BHEL SPEC./APPD DRG./APPD DATA SHEET	IR	√	2	1		

LEGEND: P: PERFORM, W: WITNESS, V: TEST CERTIFICATE REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY/END USER/END USER'S REPRESENTATIVE & 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
	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

TD-201 Rev No. 00	Form No.		<p align="center"> <b>PRODUCT STANDARD</b>          PROJECT ENGINEERING &amp; SYSTEMS DIVISION          HYDERABAD       </p>	ANNEXURE  Page 1 of 3
<div data-bbox="108 1003 130 1375" data-label="Text"> <p align="center"><b>COPYRIGHT AND CONFIDENTIAL</b></p> </div> <div data-bbox="137 689 194 1688" data-label="Text"> <p align="center">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> </div> <div data-bbox="571 452 1171 497" data-label="Section-Header"> <h2 align="center">QAP GUIDELINES &amp; FORMAT</h2> </div> <div data-bbox="769 609 976 645" data-label="Text"> <p align="center">( ANNEXURE)</p> </div> <div data-bbox="252 680 1474 757" data-label="Text"> <p>The QAP format and guidelines for filling up the format shall be used by vendor for preparation and submission of QAP after order placement.</p> </div> <div data-bbox="252 904 338 936" data-label="Section-Header"> <p><b>Note :</b></p> </div> <div data-bbox="252 976 1474 1160" data-label="List-Group"> <ol style="list-style-type: none"> <li>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.</li> <li>2. No deviation to reference document is acceptable.</li> </ol> </div> <div data-bbox="622 2114 1120 2150" data-label="Page-Footer"> <p align="center"><b><u>GUIDELINES TO VENDORS FOR</u></b></p> </div>				

Form No.	 <b>HYDERABAD</b>	<b>PRODUCT STANDARD</b> PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE
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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 align="center"><b><u>PREPARATION OF QUALITY ASSURANCE PLAN</u></b></p> <ol style="list-style-type: none"> <li>QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10.</li> <li>Each page of QAP shall contain the following information.             <ol style="list-style-type: none"> <li>Vendor's name &amp; address.</li> <li>Customer: BHEL, Hyderabad.</li> <li>Project.</li> <li>BHEL Product Standard Number/revision number as referred in P.O.</li> <li>BHEL Purchase Order Number &amp; Date.</li> <li>Product as per P.O. description.</li> <li>QAP Number (unique and shall not repeat)/revision number/date.</li> <li>Page number and number of pages</li> </ol> </li> <li>QAP shall contain four parts / stages as follows.             <ol style="list-style-type: none"> <li>Raw materials and bought out items.</li> <li>In process Control / Inspection.</li> <li>Final assembly, Inspection &amp; Testing.</li> <li>Painting, preservation &amp; packing.</li> </ol> </li> <li>Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc).</li> <li>Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT,DP etc.), hydrostatic test, calibration check etc.)</li> <li>Under 'Class', indicate minor, major or critical depending on the importance of characteristic.</li> <li>Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.)</li> <li>Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.)</li> <li>Under 'Reference document' and 'Acceptance norms', appropriate National &amp; 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 &amp; approval by our Engineering dept.</li> <li>Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc.</li> <li>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)              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,           </li> </ol>	
		Ref. Doc	

Form No.	 <b>HYDERABAD</b>	<p align="center"><b>PRODUCT STANDARD</b></p> <p align="center">PROJECT ENGINEERING &amp; SYSTEMS DIVISION HYDERABAD</p>	<p align="center">ANNEXURE</p> <hr/> <p align="center">Page 3 of 3</p>
<p align="center"><b>COPYRIGHT AND CONFIDENTIAL</b></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>under Witness (W) column use 1. Under 'Verify' column, use code 1.</p> <p>12. Under 'D' please put (✓ 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 &amp; 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 &amp; Approved Drawings.</p> <p>15. The following operations/characteristics/check points may be included (AS APPROPRIATE)</p> <ul style="list-style-type: none"> <li>a) Visual check</li> <li>b) Dimensional check</li> <li>c) Mechanical and Chemical properties.</li> <li>d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.)</li> <li>e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc.</li> <li>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.</li> <li>g) Verification of test certificate for protection class for the enclosures.</li> <li>h) Mechanical functioning of switches.</li> <li>i) Continuity of earthing and provision of earth points.</li> <li>j) Colour coding of wiring, size, tightness &amp; dressing of wiring.</li> <li>k) Review of test certificates of assembled items, raw materials, internal test reports etc.</li> <li>l) Witness of functional checks, which may include mechanical run &amp; electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc.</li> <li>m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc.</li> <li>n) Material identification ( for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.)</li> <li>o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non Destructive Tests.</li> <li>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)</li> <li>q) All tests as per BHEL Product Standard &amp; approved drawings including Type tests and Routine tests on individual items and on System as a whole.</li> <li>r) Packing and Preservation.</li> </ul> <p>16. <b>QAP Format enclosed.</b></p> <p>17. <b>Typical Manufacturing QAP is attached.</b></p>		
	Ref. Doc		



