

		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/22/A/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: DELUGE VALVE				REV NO: 00		DATE: 01/09/2013		
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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												
1.1	BODY & COVER (C.I. CASTINGS)	i) Mechanical	Major	Tensile	One (1) Per Heat	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	Lab/Mfg. TC	√	2	--	1	
		ii) Dimension	Major	Measure ment	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	Measure ment	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 & DIAPRHAGM	i) Mechanical	Major	UTS	One (1) Per Heat	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	Lab/Mfg. TC	√	2	--	1	
		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												

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	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

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2.1	Body, Cover Clapper Clamps, Seat (During machining)	i) Physical Obsvn. Dimn. Check	Major	Visual & Measure ment	100%	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	IR		2	2	1	
2.2	Body, Cover Clapper Clamps, Seat (After final machining)	i) Physical Obsvn. Dimn. Check	Major	Visual & Measure ment	100%	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	IR		2	2	1	
2.3	Body & Cover	i) Hydro Test	Major	Leak proof test	100%	25 kg/cm2 for 5 Mins.	No Leakage	IR		2	2	1	
2.4	Body & Cover	i) Surface Cleaning	Major	Pressure Test, Dressing/ Grinding/ 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)	i) Physical Obsvn. Dimn. Check	Major	Visual & Measure ment	100% for 2 & 10% for 1	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	IR	√	2	1	-	
		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	Performa nce Test	100% for 2 & 10% for 1	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	IR	√	2	1	-	
		iv) Painting & Marking	Major	Visual	100%	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	IR	√	2	2	1	
4.0	PRESERVATION & PACKING												
4.1	DV. Assy. (Painted)	Properly packing with necessary marking	Major	Visual	100%	App TDS/Drg./ Spec.	App TDS/Drg./ Spec.	Packing Report		2	2	1	

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SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
4.2		Preservation must be maintained at proper place	Major	Visual	100%	App TDS/Drg./Spec.	App TDS/Drg./Spec.	Packing Report		2	2	1	

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DIFFERENTIAL PRESSURE SWITCH

1.0 RAW MATERIALS & BOUGHT OUT ITEMS													
1.1	DIFFERENTIAL PRESSURE SWITCH	MATERIAL OF CONSTRUCTION	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL COMPLIANCE CERTIFICATE	√	2	--	1	
2.0 FINAL INSPECTION & TESTING													
2.1	DIFFERENTIAL PRESSURE SWITCH	PHYSICAL VERIFICATION & MARKING CHECK	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1		
2.2		DIMENSIONAL VERIFICATION	MAJOR	MEASUREMENT	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	DIMENSION REPORT	√	2	1		
2.3		CALIBRATION	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	CALIBRATION TEST CERTIFICATE	√	2	--	1	

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	VENDOR's SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

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										P	W	V	
2.4		WEATHER PROOF	MAJOR	VERIFICATION	FOR ONE SAMPLE OF APPLICABLE DESIGN	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	IP CERTIFICATE	√	2	--	1	
2.5		GARANTEE PERFORMANCE	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	GUARANTEE CERTIFICATE	√	2	--	1	
3.0	PRESERVATION & PACKING												
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKING	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	--	1	

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										P	W	V	

PRESSURE SWITCH

1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
1.1	PRESSURE SWITCH	MATERIAL OF CONSTRUCTION	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL COMPLIANCE CERTIFICATE	√	2	--	1	
2.0	FINAL INSPECTION & TESTING												
2.1	PRESSURE SWITCH	PHYSICAL VERIFICATION & MARKING CHECK	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1		
2.2		DIMENSIONAL VERIFICATION	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	DIMENSION REPORT	√	2	1		
2.3		CALIBRATION	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	CALIBRATION TEST CERTIFICATE	√	2	--	1	
2.4		WEATHER PROOF & HAZARDOUS AREA CERTIFICATE	MAJOR	VERIFICATION	FOR ONE SAMPLE OF APPLICABLE DESIGN	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	IP CERTIFICATE	√	2	--	1	

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										P	W	V	
2.5		GUARANTEE PERFORMANCE	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	GUARANTEE CERTIFICATE	√	2	--	1	
3.0	PRESERVATION & PACKING												
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKING	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	--	1	

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4. All type test reports submitted shall not be older than 5 yrs from the date of purchase order.
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SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
LEVEL SWITCH													

1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
1.1	LEVEL SWITCH	MATERIAL OF CONSTRUCTION	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL COMPLIANCE CERTIFICATE	√	2	--	1	
2.0	FINAL INSPECTION & TESTING												
2.1	LEVEL SWITCH	PHYSICAL VERIFICATION & MARKING CHECK	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1		
2.2		DIMENSIONAL VERIFICATION	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	DIMENSION REPORT	√	2	1		
2.3		HIGH VOLTAGE TEST AT 2KV	MAJOR	TEST	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	TEST REPORT	√	2	--	1	
2.4		WEATHER PROOF	MAJOR	VERIFICATION	ON ONE SAMPLE OF APPLICABLE DESIGN/ MODEL	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	IP CERTIFICATE	√	2	--	1	

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										P	W	V	
2.5		GUARANTEE PERFORMANCE	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	GUARANTEE CERTIFICATE	√	2	--	1	
2.6	EXTERNAL CHAMBER, FLOAT AND OTHER PRESSURE PARTS	IBR CERTIFICATE*	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	IBR FORM-III C	√	2	--	1	*if applicable
3.0	PRESERVATION & PACKING												
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKING	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	--	1	

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PRESSURE GAUGE

1.0 RAW MATERIALS & BOUGHT OUT ITEMS													
1.1	PRESSURE GAUGE	MATERIAL OF CONSTRUCTION	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL COMPLIANCE CERTIFICATE	√	2	--	1	
2.0 FINAL INSPECTION & TESTING													
2.1	PRESSURE GAUGE	VISUAL & MARKING CHECK	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1		
2.2		CALIBRATION	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	CALIBRATION TEST CERTIFICATE	√	2	--	1	
2.3		WEATHER-PROOFNESS	MAJOR	TYPE TEST	ON ONE SAMPLE OF APPLICABLE DESIGN/ MODEL	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	IP CERTIFICATE	√	2	--	1	
2.4		GUARANTEE PERFORMANCE	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	GUARANTEE CERTIFICATE	√	2	--	1	
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3.0 PRESERVATION & PACKING													
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKING	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	--	1	

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SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
DIFFERENTIAL PRESSURE GAUGE													

1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
1.1	DIFFERENTIAL PRESSURE GAUGE – SENSOR & CASE OF INSTRUMENT etc.	MATERIAL OF CONSTRUCTION	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL COMPLIANCE CERTIFICATE	√	2	--	1	
2.0	FINAL INSPECTION & TESTING												
2.1	DIFFERENTIAL PRESSURE GAUGE	PHYSICAL VERIFICATION & MARKING CHECK	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1		
2.2		CALIBRATION	MAJOR	REVIEW	100%			CALIBRATION TEST CERTIFICATE	√	2	--	1	
2.3		WEATHER PROOF	MAJOR	TYPE TEST	ON ONE SAMPLE OF APPLICABLE DESIGN/ MODEL			IP CERTIFICATE	√	2	--	1	
2.4		ACCURACY TEST	MAJOR	TYPE TEST	ON ONE SAMPLE OF APPLICABLE DESIGN/ MODEL			TEST CERTIFICATE	√	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
	VENDOR's SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

---NA---

बी एच ई एल BHEL		MANUFACTURING QUALITY PLAN							QP. NO.: PE&SD/MQP/FIP/02 REV.00				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT: INSTRUMENT			REV NO: 00		DATE: 27/12/2013		
									PAGE 10 OF 12				
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
2.5		MAXIMUM WORKING PRESSURE WITHSTAND ABILITY	MAJOR	TYPE TEST	ON ONE SAMPLE OF APPLICABLE DESIGN/ MODEL	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	TEST CERTIFICATE	√	2	--	1	
2.6		GUARANTEE PERFORMANCE	MAJOR	REVIEW	100%			GUARANTEE CERTIFICATE	√	2	--	1	
3.0	PRESERVATION & PACKING												
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKING	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	--	1	

NOTE:-

1. This standard MQP should be read along with specification (latest revision), approved drawings & approved data sheet.
2. Drawing/data sheet shall prevail over quality plan for contradiction if any between quality plan and drawing/specification.
3. All test certificates/reports reviewed and certified by TPI/BHEL shall be submitted to BHEL as documentation package.

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
	VENDOR's SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE) --NA--

		MANUFACTURING QUALITY PLAN						QP. NO.: PE&SD/MQP/FIP/02 REV.00					
								REV NO: 00		DATE: 27/12/2013			
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032						PRODUCT: INSTRUMENT		PAGE 11 OF 12			
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS

LEVEL GAUGE

1.0 RAW MATERIALS & BOUGHT OUT ITEMS													
1.1	LEVEL GAUGE	MATERIAL OF CONSTRUCTION	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL COMPLIANCE CERTIFICATE	√	2	--	1	
2.0 FINAL INSPECTION & TESTING													
2.1	LEVEL GAUGE	PHYSICAL VERIFICATION & MARKING CHECK	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1		
2.2		CORROSION TEST	MAJOR	TEST	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	TEST CERTIFICATE	√	2	--	1	
2.3		THERMAL SHOCK TEST	MAJOR	TEST	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	TEST CERTIFICATE	√	2	--	1	
2.4		HYDRAULIC TEST	MAJOR	TEST	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	TEST CERTIFICATE	√	2	--	1	

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	VENDOR's SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

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		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT: INSTRUMENT		REV NO: 00		DATE: 27/12/2013			
								PAGE 12 OF 12					
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
2.5		IBR CERTIFICATE*	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	IBR FORM - III C	√	2	--	1	*if applicable
2.6		GUARANTEE PERFORMANCE	MAJOR	REVIEW	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	GUARANTEE CERTIFICATE	√	2	--	1	
3.0	PRESERVATION & PACKING												
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKING	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	--	1	

NOTE:-

7. This standard MQP should be read along with specification (latest revision), approved drawings & approved data sheet.
8. Drawing/data sheet shall prevail over quality plan for contradiction if any between quality plan and drawing/specification.
9. All test certificates/reports reviewed and certified by TPI/BHEL shall be submitted to BHEL as documentation package.

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बी एच ई एल BHEL		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/10/A/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: HVWS NOZZLE SPARY				REV NO: 00		DATE: 01/09/2013		
									PAGE 1 OF 2				
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
									D	P	W	V	
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
	HOUSING (BRASS)	CHEMICAL	MAJOR	CHEM. ANALYSIS	ONE PER HEAT OR BATCH	As per approved drg/TDS//Spec.	As per approved drg/TDS//Spec.	Lab./Mfg. TC	√	2	-	1	
		DIMENSION	MAJOR	MEASURE MENT	ONE PER HEAT OR BATCH	As per approved drg/TDS//Spec.	As per approved drg/TDS//Spec.	IR	-	2	2	1	
	SCROLL (BRASS)	MECH. & CHEMICAL	MAJOR	MECH & CHEM. ANALYSIS	ONE PER HEAT OR BATCH	As per approved drg/TDS//Spec.	As per approved drg/TDS//Spec.	Lab./Mfg. TC	-	2	-	1	
2.0	INPROCESS INSPECTION												
	HOUSING	MECH. & DIMENSION CHECK	MAJOR	MEASURE MENT & GAUGE CHECK	100%	AS per approved drg.	AS per approved drg.	IR	-	2	2	1	
	SCROLL	DIMENSTION CHECK	MAJOR	MEASURE MENT & GAUGE CHECK	100%	AS per approved drg.	AS per approved drg.	IR	-	2	2	1	
	ASSY	Fitment & Assembly Check	MAJOR	VISUAL	100%	AS per approved drg.	AS per approved drg.	IR	-	2	2	1	
		Cleaning & Flow Testing	MAJOR	FLOW TEST	100%	AS per approved drg.	AS per approved drg.	IR	-	2	2	1	
3.0	FINAL INSPECTION & TESTING												

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		MANUFACTURING QUALITY PLAN						MQP. NO.: SMQP/FPS/10/A/092013					
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: HVWS NOZZLE SPARY			REV NO: 00		DATE: 01/09/2013			
								PAGE 2 OF 2					
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
	HVWS NOZZLE (Complete Assy)	PHYSICAL OBSERVATION & DIMN. CHECK	MAJOR	VISUAL & MEASURE MENT	100% for 2, 10% for 1	As per approved drg/TDS//Spec .	As per approved drg/TDS//Spec.	IR	√	2	2, 1	-	
		PERFORMANCE (FLOW,SPRAY ANGLE,SPRAY PATTERN TEST)	CRITIC AL	FLOW TEST	100% for 2, 10% for 1	As per approved drg/TDS//Spec .	As per approved drg/TDS//Spec.	IR / TC	√	2	2, 1	-	
		MARKING & FINISH	MAJOR	VISUAL	100% for 2, 10% for 1	As per approved drg/TDS//Spec .	As per approved drg/TDS//Spec.	IR	√	2	2, 1	-	
4.0	PRESERVATION & PACKING												
	HVWS NOZZLE ASSY	PROPERLY PACKING WITH NECESSARY MARKING	MAJOR	VISUAL	100%	As per approved drg/TDS//Spec .	As per approved drg/TDS//Spec.	PACKING NOTE	-	2	2	-	
		PRESERVATION MUST BE MAINTAINED IN PROPER PLACE	MAJOR	VISUAL	100%	As per approved drg/TDS//Spec .	As per approved drg/TDS//Spec.	PACKING NOTE	-	2	2	-	

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बी एच ई एल BHEL		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/22/B/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: HYDRANT VALVE				REV NO: 00		DATE: 01/09/2013		
									PAGE 1 OF 2				
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												
	Body, Bonnet, Female outlet	Chemical, Physical	Major	Analysis Test	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	Spindle	Chemical, Physical	Major	Analysis Test	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	Spring	Chemical	Major	Analysis Test	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	Outer Washer, Seat Washer	Hardness	Minor	Measurement	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
2.0	INPROCESS INSPECTION												
	Water tightness Seat Test	Leakage	Major	Hydro Test	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IIR	√	2	2	1	
	Hydrostatic Pressure Test	Leakage	Major	Hydro Test	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IIR	√	2	2	1	
	Operation Test	Open-close	Major	Functional	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IIR	√	2	2	1	
	Flow Test	Flow	Major	Flow	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IIR	√	2	2	1	
3.0	FINAL INSPECTION & TESTING												
	Water tightness Seat Test	Leakage	Major	Hydro Test	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	

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	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/22/B/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT: HYDRANT VALVE			REV NO: 00		DATE: 01/09/2013		
									PAGE 2 OF 2				
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
	Hydrostatic Pressure Test	Leakage	Major	Hydro Test	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	
	Operation Test	Open-close	Major	Functional	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	
	Flow Test	Flow	Major	Flow	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	
4.0	PRESERVATION & PACKING												
	Identification	Marking & Stamping	Major	Verification & Stamping	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	2	1	
	Painting	Final finish & Paint DFT	Major	Visual & Measurement	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Painting Report	√	2	1	-	
	Packing	Soundness of packing	Major	Verification	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	2	1	

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		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/24/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032					PRODUCT: VALVES			REV NO: 00		DATE: 01/09/2013	
		PAGE 1 OF 4											
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
									D	P	W	V	
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
	Casting and forging (Body, Bonnet, Disc, Stem, Body Rings,)	Surface Quality MPT for Hydrogen Service. Dimension, Chemical and Mechanical Properties (Not Special Requirements of heat treatment, Hardness, Impact, Bend, Tensile Test etc. for H2 service and NACE)	Major	Analysis Test	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	All Castings Materials	Heat Treatment as per Specs	Major	Analysis Test	One/Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	Casting, forgings for Austenitic Stainless Steel body and bonnet only.	Inter Granular Corrosion (IGC) Test and Stabilisation Heat Treatment	Major	Analysis Test	Per Heat /Per solution Annealed Lot	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	All Castings	Radiography Examination	Minor	Analysis Test	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	Bars for Trim Materials	Chemical Analysis	Minor	Chemical Analysis	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
	Stems, Gaskets, Gear Unit, Fastener, Gland, Packing etc.	Surface Defects, Dimension, Physical and chemical properties	Major	Chemical Analysis	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Lab. /Supp. Certificate	√	2	2	1	
2.0	INPROCESS INSPECTION												
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		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT:VALVES				REV NO: 00		DATE:01/09/2013	
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SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
		WPS/PQR/WPQ	Major	Chemical Analysis	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IIR	√	2	2	1	
3.0	FINAL INSPECTION & TESTING												
		Shell Test Gate/Globe/Check Back Seat-Gate/Globe Seat Test- Gate/Globe/Check	Major	Visual	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	
		Functional/Operational Test (For motor Operated /Actuator Operated)	Major	Functional Test	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	
		PMI Check Finished Valve (Body, Bonnet, Stem)	Major	PMI Check	10%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1	-	

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	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/24/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT: VALVES			REV NO: 00		DATE: 01/09/2013		
		PAGE 3 OF 4											
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	*	AGENCY			REMARKS
									D	P	W	V	
	Finished Valve (Body, Bonnet, Stem)	Visual (TC Verification, SI no Marking, Flange Finish, Tag no) Bevel, Dimension and Special Requirements in PR, Painting of Carbon and Low alloy Steel and provision of bypass arrangement (if applicable)	Major	Test	Visual 100% by Supplier and PURCHASER / END CUSTOMER. Dimension-100% by supplier and at random by PURCHASER / END CUSTOMER subject to a minimum of 10 %	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	✓	2	1	-	
	Pre-qualification Test	Fire safe test (soft seated ball, plug, butterfly and lubricated plug valves) cryogenic test	Major	Test	1 valve per Type/size and order	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	✓	2	1		

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	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

		MANUFACTURING QUALITY PLAN							MQP. NO.: SMQP/FPS/24/092013				
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PRODUCT:VALVES			REV NO: 00		DATE:01/09/2013		
									PAGE 4 OF 4				
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
		BOM CHECK	Major	Visual	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	1		
4.0	PRESERVATION & PACKING												
	Identification	Marking & Stamping	Major	Verification & Stamping	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	2	1	
	Painting	Final finish & Paint DFT	Major	Visual & Measurement	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	Painting Report	√	2	1	-	
	Packing	Soundness of packing	Major	Verification	100%	Approved BHEL Spec./Drawing/datasheet	Approved BHEL Spec./Drawing/datasheet	IR	√	2	2	1	

NOTE:-

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2. Drawing/data sheet shall prevail over quality plan for contradiction if any between quality plan and drawing/specification.
3. All test certificates/reports reviewed and certified by TPI/BHEL shall be submitted to BHEL as documentation package.
4. All type test reports submitted shall not be older than 5 yrs from the date of purchase order.
5. Any project/customer specific requirements which shall be notified have to be fulfilled by the vendor at the time of execution of order.

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		MANUFACTURING QUALITY PLAN						MQP. NO.: SMQP/FPS/26/092013					
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: FIRE WATER STORAGE TANK (Site Fabricated Tanks)			REV NO: 00		DATE: 01/09/2013			
								PAGE 1 OF 2					
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	PLATES, STRUCTURES	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	One per Lot/ Batch / Heat	Appd. Dwgs. / datasheet/ spec.	Appd. Dwgs. / datasheet/ spec.	MTC	✓	2	--	1	
1.2	PIPES	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	One per Lot/ Batch / Heat			MTC	✓	2	--	1	
		Hydro Test, Dimension	Major	Hydro test, Measurement	100%			MTC/TC	✓	2	--	1	
1.3	PIPE FITTINGS	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	One per Lot/ Batch / Heat			MTC	✓	2	--	1	
		NDE	Major	NDE	As per Tech Spec			NDE Reports	✓	2	--	1	
1.4	FLANGES	Chemical & Mechanical Properties	Major	CALIBRATION TEST	One per Lot/ Batch / Heat	Appd. Dwgs. / datasheet/ spec.	Appd. Dwgs. / datasheet/ spec.	MTC	✓	2	--	1	
		Rating, Type etc.	Major	Visual	10%			MTC/IR	✓	2	--	1	
1.5	VALVES	Chemical & Mechanical Properties	Major	Chem., Mech. Analysis	One per Lot/ Batch / Heat			MTC	✓	2	--	1	
		Hydro Test, NDE, Fire Safe certificate, etc *	Major	Hydro, NDE	As per BHEL Spec/ Datasheet			TC/IR	✓	2	--	1	*As applicable
1.6	INSTRUMENTS	Chemical & Mechanical Properties, Calibration	Major	Chem., Mech. Analysis	One per Lot/Batch /Heat, 100%			MTC	✓	2	--	1	

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	BHEL QA SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)

		MANUFACTURING QUALITY PLAN						MQP. NO.: SMQP/FPS/26/092013					
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PRODUCT: FIRE WATER STORAGE TANK (Site Fabricated Tanks)			REV NO: 00		DATE: 01/09/2013			
								PAGE 2 OF 2					
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
		Hydro test(as applicable), Type Test(Weather, Proof & Hazardous area certification etc.)*	Major	Hydro, Type Test	100%	Appd. Dwgs. / datasheet/ spec.	Appd. Dwgs. / datasheet/ spec.	TC/IR	✓	2	--	1	*As applicable
1.7	FASTENERS	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	One per Lot/ Batch / Heat			MTC	✓	2	--	1	
2.0	INPROCESS INSPECTION												
	--												
3.0	FINAL INSPECTION & TESTING												
3.1	All items mentioned in SI no. 1.0 & in appd. BOM including Spares if any	Visual Check, Dimensional	Major	Visual & Measurement	100%	Appd. Dwg. / datasheet/ spec/ Appd. BOM	Appd. Dwg. / datasheet/ spec/ Appd. BOM	IR	✓	2	1	--	
		BOM Check	Major	Visual	100%			IR	✓	2	1	--	
4.0	PRESERVATION & PACKING												
4.2	PACKING	Soundness of Packing	Major	Visual	Random	Appd. Dwg. / datasheet/ spec	Appd. Dwg. / datasheet/ spec	Packing List	✓	2	2	-	

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