



STANDARD MANUFACTURING QUALITY PLAN

QP. NO.: SMQP/RIL/PFP/052014

PROJECT ENGINEERING & SYSTEMS
DIVISION BHEL,
RC PURAM, HYD-502032

PROJECT: RUPPL-HMD & DMD
PRODUCT: PRE FABRICATED PIPING

REV NO: 0 DATE: 17.05.2014

PAGE 1 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		
1.0	RAW MATERIALS & BOUGHT OUT ITEMS														
	Pipes	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	100%	BHEL Spec/ Appd. Dwg/ Datasheet	BHEL Spec/ Appd. Dwg/ Datasheet	MTC	√		2		1		
		Dimensions/ Thickness	Major	Measurement	100%			IR	√		2			1	
		Heat Treatment	Major	TC Review	One per Lot/Batch /Heat			TC	√		2	2		1	
	Pipe Fittings	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	100%	BHEL Spec/ Appd. Dwg/ Datasheet	BHEL Spec/ Appd. Dwg/ Datasheet	MTC	√		2		1		
		Dimensions/ Thickness	Major	Measurement	100%			IR	√		2			1	
		MPI/LP*	Critical	MPI/LP	100%			TC	√		2			1	*Refer Note-1
		RT	Critical	RT	100%			RT Report	√		2			1	For all Welds
		Hardness	Major	Measurement	100%			TC	√		2			1	
		Heat Treatment	Major	TC Review	One per Lot/Batch /Heat			TC, HT Chart	√		2	2		1	
	Flanges	Chemical & Mechanical Properties	Major	Chem. & Mech. Analysis	100%	BHEL Spec/ Appd. Dwg/ Datasheet	BHEL Spec/ Appd. Dwg/ Datasheet	MTC	√		2		1		
		Dimensions/ Thickness, Hardness, Rating	Major	Measurement	100%			IR	√		2			1	

<p>LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL CQS (OR BHEL NOMINATED INSPECTION AGENCY) & 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.</p>	<p>APPROVED BY BABU DINAKAR Y N</p> <p>BHEL QA SIGNATURE</p>	<p>APPROVED BY</p> <p>CUSTOMER'S SIGNATURE & STAMP</p>
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PAGE 2 OF 4

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2.0 INPROCESS INSPECTION														
		WPS, PQR, WPQ	Major	Doc. Review	100%	BHEL Spec/ Appd. Dwg/ Datasheet	BHEL Spec/ Appd. Dwg/ Datasheet	WPS,PQR, WPQ	--	2		1		
		Welding Electrodes (Composition)	Major	TC review	100%			TC	√	2		1		
		Fit-up for Piping Assembly before Final Welding	Major	Visual	100%			IR	√	2		1		
		Welding (Visual Check)	Critical	Visual	100%			IR	√	2	1			
		DP for Fillet Welds	Critical	LPT	20%			IR	√	2	1			*for Non IBR Piping (For IBR-as per IBR norms)
		RT on Butt Welds	Critical	RT	100% for AS 10% for SS & CS			IR	√	2		1		*for Non IBR Piping (For IBR-as per IBR norms)
		Post Weld Heat Treatment	Major	Heat Treatment	One per Lot/Batch /Heat			TC/ HT Chart	√	2	2	1		*for all AS material & CS Material (of thickness >=19 or as per Project Specific Requirement)
		RT on PWHT Joints	Major	RT	100%			NDE Reports, TC	√	2	2	1		--do--
		Hardness of Welding Joints after PWHT	Major	Measurement	Random			IR	√	2	1			--do--

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PAGE 3 OF 4

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3.0 FINAL INSPECTION & TESTING														
	Piping Assy.	Dimensional (OD, ID, Length, Thickness, Edge preparation, Straightness, Weld End Diameter, Position of Attachments etc.)	Critical	Measurement	100%	BHEL Spec/ Appd. Dwg/ Datasheet	BHEL Spec/ Appd. Dwg/ Datasheet	IR	√	2	1		10% Witness by BHEL/BHEL's TPIA	
		IBR Certificate*	Critical	TC Review	100%			IBR Certificate	√	2		1		*if applicable
		PMI*	Critical	PMI test	100%			TC	√	2	1			*100% witness by BHEL/BHEL's TPIA for AS and SS
		Visual, BOM Check	Major	Visual	100%			TC	√	2	1			
4.0 PRESERVATION & PACKING														
	Piping Assy.	Surface Preparation	Major	Air or water Blasting	Random	BHEL Spec/ Appd. Dwg/ Datasheet	BHEL Spec/ Appd. Dwg/ Datasheet	IR	√	2	2	1		
		Painting*, (Shade, DFT Check) Marking	Major	Visual, Measurement	Random			IR	√	2	1			*if applicable
		Packing	Major	Visual	Random			Packing List	√	2		1		

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Notes:-

- MPI/LPT Should be carried on Knuckle of Reducers, Outer bend portion of Elbows and Neck portion of Tees.
 - CS & AS (>=2") Material – MPI
 - SS Material(>=2") – LPT.
 - Butt Weld Ends
- This MQP should be read along with specification, approved drawings & approved datasheet. (Latest revisions to be considered as per PO).
- Drawing/datasheet shall prevail over quality plan for contradiction if any.
- Any project/customer specific requirements which shall be notified have to be fulfilled by the vendor at the time of execution of order.

Abbreviations:-

MTC	-	Material Test certificate	WPS	-	Welding Procedure Specification
IBR	-	Indian Boiler Regulations	PQR	-	Procedure Qualification Record
DFT	-	Dry Film Thickness	WPQ	-	Welder Performance Qualification
TC	-	Test Certificate	NDE	-	Non Destructive Examination
IS	-	Indian Standards	UTS	-	Ultimate Tensile Strength
Appd.			YS	-	Yield Strength
Dwg.	-	Approved Drawing	EL.	-	Elongation
PMI	-	Positive Material Identification	OD	-	Outer Diameter
IGC	-	Intergranular Corrosion	ID	-	Internal Diameter
IR	-	Inspection Report			

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