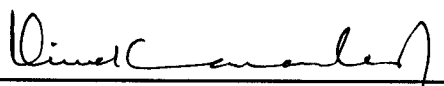


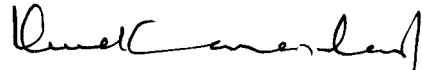




 BHARAT HEAVY ELECTRICALS LTD PIPING CENTRE, CHENNAI - 17 QUALITY ASSURANCE & CONTROL DEPT.			STANDARD QUALITY PLAN FOR NON-IBR PIPING FABRICATION WITH VENDOR MATERIAL PROJECT : Non- NTPC Projects						QP NO : QPG 55 REV.NO : 01 DATE : 13.10.2011		
S.No	COMPONENT & OPERATIONS	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY		REMARKS
									M	B	
1	2	3	4	5	6	7	8	9	D*	10	11
1.0	Material Pipes as per drg.	All raw material and fittings shall be manufactured by the Vendors reffered in the "RMVENDLISTPVM (Latest revision)" Co-relation & verification of Mill TCs for a) Chemical Composition. b) Mech. Properties c) Soundness d) Heat Treatment as applicable e) Surface finish f) Dimension (OD / ID & Wall Thickness) g) Hardness incase of Duplex SS	Major	Verification	100%	BHEL Drawing , Material Spec.	Mill TCs	√	P	V	Note 1 TC - Test Certificate
1.11				Chem. Analysis	1/Heat	BHEL Drawing , Material Spec.					
1.12				Mech. Test	1/Heat/size	BHEL Drawing , Material Spec.					
1.13				NDT	100%	Material Spec					
1.14				Time/Temp.	100%	Material Spec.					
1.15				Visual	100%	BHEL Drawing , Material Spec.					
1.16				Measurement	100%	BHEL Drawing , Material Spec.					
				Measurement	100%	Material Spec.					
1.20	Plates as per drg.	Co-relation & verification of Mill TCs for a) Chemical Composition. b) Mech. Properties c) Soundness d) Dimension & Surface finish	Major	Verification	100%	BHEL Drawing , Material Spec.	Mill TCs	√	P	V	Note 1
1.21				Chem. Analysis	1/Heat	BHEL Drawing , Material Spec.					
1.22				Mech. Test	1/Heat	BHEL Drawing , Material Spec.					
1.23				UT	100%	SA578					
1.24				Measurement & Visual	100%	BHEL Drawing , Material Spec.					
1.30	Rounds as per drg.	Co-relation & verification of Mill TCs for a) Chem. Properties. b) Mech. Properties c) Soundness (for dia > 50mm)	Major	Verify	100%	BHEL Drawing , Material Spec.	Mill TCs	√	P	V	Note 1
1.31				Chem. Analysis	1/Heat	BHEL Drawing , Material Spec.					
1.32				Mech. Test	1/Heat	BHEL Drawing , Material Spec.					
1.33				UT	100%	SA 388					
 PREPARED BY VIVEKANANDA YELLU ENGR / QA			LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER ; B: BHEL P: PERFORM W: WITNESS AND V: VERIFICATION					 APPROVED BY G.PANNEER SELVAM DGM / QA			
SIGNATURE			PAGE 01 OF 03								

 BHARAT HEAVY ELECTRICALS LTD PIPING CENTRE, CHENNAI – 17 QUALITY ASSURANCE & CONTROL DEPT.			STANDARD QUALITY PLAN FOR NON-IBR PIPING FABRICATION WITH VENDOR MATERIAL PROJECT : Non- NTPC Projects						QP NO : QPG 55 REV.NO : 01 DATE : 13.10.2011			
S.No	COMPONENT & OPERATIONS	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY		REMARKS	
1	2	3	4	5	6	7	8	9	D*	M	B	11
1.34 1.35		d) Heat Treatment (If applicable) e) Dimension & Surface finish		Time/temp. Measurement & Visual	100% 100%	BHEL Drawing , Material Spec. BHEL Drawing , Material Spec.						
1.40 1.41 1.42 1.43 1.44 1.45 1.46 1.47 1.48 1.49 1.50	Fitting as per drg.	Co-relation & verification of Mill TCs for a) Chem. Composition b) Mech. Test c) Dimensions of fittings (OD & wall thickness, etc.,) d) Surface Defects e) Soundness (for thk > 6mm or dia > NB 200mm) f) Heat Treatment if applicable g) Hardness h) Supplementary Tests for SA 234 WPC, WP11, WP12, WP22 i) PMI for AS fittings j) Weld quality (in case of welded fitting, if any)	Major	Verify Chem. Analysis Mech. Test Measurement & Visual LPI/MPI ## UT Time/Temp. Measurement (a) Product Analysis (b) Tension test PMI RT	100% 1/Heat 1/Heat 100% 100% 100% @@ 1/Heat/ size 1/Heat/HT Lot / size 100% 100%	BHEL Drawing , Material Spec. BHEL Drawing , Material Spec. BHEL Drawing , Material Spec. BHEL Drawing , Material Spec. ASTM E709 SA 388 / ASME Sec VIII Div II cl 3.3.4 Material Spec. Material Spec. Material Spec. Material Spec. ASME Sec V / ASME Sec VIII Div-I UW 51	TCs	√	P	V	Note 2 ## : LPI for SS and MPI for others @@ : 100% for Duplex SS ; 10% for others	
2.0	Piping Fabrication	Piping fabrication, Testing and inspection shall be done as per relevant contract specific Quality Plan. Customer inspection , if any shall be taken care as per contract specific Quality Plan.										
3.0	Positive Material Identification for Alloy Steel	Chemical check	Major	Spectro/ X-Ray fluorescence	100%	As per Required Material (ASME) Specification	Report	√	P	W		
 PREPARED BY VIVEKANANDA YELLU ENGR / QA			LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER ; B: BHEL P: PERFORM W: WITNESS AND V: VERIFICATION					 APPROVED BY G.PANNEER SELVAM DGM / QA				
SIGNATURE		PAGE 02 OF 03										

 BHARAT HEAVY ELECTRICALS LTD PIPING CENTRE, CHENNAI - 17 QUALITY ASSURANCE & CONTROL DEPT.			STANDARD QUALITY PLAN FOR NON-IBR PIPING FABRICATION WITH VENDOR MATERIAL PROJECT : Non- NTPC Projects						QP NO : QPG 55 REV.NO : 01 DATE : 13.10.2011			
S.No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY		REMARKS	
									M	B		
1	2	3	4	5	6	7	8	9	D*	10	11	
4.0	Final Dimension	Dimensions	Major	Measurement	100%	BHEL Drawing		Report	√	P	W	
5.0	Painting	Painting shall be done as per relevant contract specific Painting scheme and inspection as per contract QP										
6.0	Identification & Colour coding	Marking & Colour coding	Major	Visual	100%	BHEL Drawing , PO		IR	√	P	V	Note 8
7.0	End Protection	End protection	Major	Visual	100%	BHEL Drawing , PO				P	V	Note 9
8.0	Documentation	Verification of Records	Major	Visual	100%	As per QPG 55 and Contract Quality plan		IR, Report, RM TC	√	P	V	
NOTES: 1) (a) If the raw materials are received directly from RM Manufacturer's work, the material shall be accepted based on (i)correlation of Heat number on material with TC and (ii)verification of TCs. (b) If the materials are received from Dealers place, check test (Chemical and Mechanical tests on one sample per Heat/ size) shall be done in addition to the above for accepting the material BHEL shall identify and witness the sample for check test Special requirements like supplementary test , restriction of Raw material Vendors, NDT requirements, if any indicated in contract specific QP shall be taken care. 2) Fittings shall be procured only from BHEL approved Manufacturers . All the requirements covered in para 1.40 to 1.50 shall be taken care by Sub-vendor while ordering fittings on the manufacturer. 3) Heat number transfer to cut piece (raw material) shall be done by Sub-Vendor. 4) The items shall be manufactured as per BHEL drawing . 5) Welding Electrodes and Paints used shall be of BHEL approved make 6) All items shall be inspected and cleared by BHEL / BHEL authorised Inspection agency. 7) If Customer inspection is invoved as per Contract QP, the Vendor shall get despatch clearance from the Customer before despatch of finished material 8) The finished components shall be punched with DU code (14 digit work order du details),Heat number, material specification, maker's emblem & Inspectors seal. In addition, the DU code, Heat no. and Material specification shall also be paint stencilled. Colour coding : Red for SA106 Gr B ; Blue for SA106 GrC ; Green & White for SA335P11 ; Black & Red for SA335 P12 ; Blue & Red for SA335 P22; Blue & Yellow for SA312 TP304; Black & Green for SA312 TP316; Blue & Brown for SA312 TP321; Blue, Red & White for SA312 TP347. 9) Machined ends shall be well protected using end caps and fittings shall be suitably packed in box / crate to avoid transit & other damages.												
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SIGNATURE			PAGE 03 OF 03									