

TD-201 Rev No. 00	Form No.		PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE-2
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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. 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 is attached as a reference document and to be used by successful bidder in future for preparation and submission of QAP for BHEL /CUSTOMER approval. 2. No deviation to the typical QAP is acceptable.				

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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 .	<u>GUIDELINES TO VENDORS FOR PREPARATION OF QUALITY ASSURANCE PLAN</u> - QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10. - Each page of QAP shall contain the following information. - Vendor's name & address. - Customer: BHEL, Hyderabad. - Project. - BHEL Product Standard Number/revision number as referred in P.O. - BHEL Purchase Order Number & Date. - Product as per P.O. description. - QAP Number (unique and shall not repeat)/revision number/date. - Page number and number of pages - QAP shall contain four parts / stages as follows. - Raw materials and bought out items. - In process Control / Inspection. - Final assembly, Inspection & Testing. - Painting, preservation & packing. - Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc). - Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT,DP etc.), hydrostatic test, calibration check etc.) - Under 'Class', indicate minor, major or critical depending on the importance of characteristic. - Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.) - Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.) - 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. - Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc. - 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)		
	Ref. Doc		

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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.		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. 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. 13. Vendor's signature & stamp should be available on each page of QAP. 14. Vendor should read the BHEL Product Standard thoroughly and QAP should be made only inline and relevant to the Specification & Approved Drawings. 15. The following operations/characteristics/check points may be included (AS APPROPRIATE) - Visual check - Dimensional check - Mechanical and Chemical properties. - Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.) - Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc. - 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. - Verification of test certificate for protection class for the enclosures. - Mechanical functioning of switches. - Continuity of earthing and provision of earth points. - Colour coding of wiring, size, tightness & dressing of wiring. - Review of test certificates of assembled items, raw materials, internal test reports etc. - Witness of functional checks, which may include mechanical run & electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc. - PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc. - Material identification (for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.) - Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non-Destructive Tests. - 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) - All tests as per BHEL Product Standard & approved drawings including Type tests and Routine tests on individual items and on System as a whole. - Packing and Preservation. 16. QAP Format enclosed. 17. Typical Manufacturing QAP(s) is /are attached.		
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:										
		PRODUCT:			BHEL SPEC:				REV:						
												PAGE 1 OF 1			
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														
2.0	INPROCESS INSPECTION														
3.0	FINAL INSPECTION & TESTING														
4.0	PRESERVATION & PACKING														

VENDOR TO NOTE: THIS FORMAT IS IN MICROSOFT WORD. HEADER & FOOTER SHALL BE AVAILABLE IN EACH PAGE OF QP. QP SHALL BE IN LANDSCAPE & A4 SIZE ONLY. FONT SIZE SHALL BE MIN 10. VENDOR SHALL SIGN & STAMP IN EACH PAGE OF QP. LOI REF. & DATE ARE NOT ACCEPTABLE. P.O.NO. & DATE SHALL BE INDICATED. QP NO. SHOULD BE UNIQUE AND SHALL NOT REPEAT. ALL THE TESTS / CHECKS INDICATED IN THE BHEL SPEC. SHALL BE INDICATED IN THE QP.

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.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP

		TYPICAL MANUFACTURING QUALITY PLAN						MQP. NO.:					
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PROJECT: PACKAGE: Module Mounting Structures BHEL TECH SPEC:			REV NO:		DATE:			
								PAGE 1 OF 6					
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	Raw Materials	Mechanical & Chemical Properties	Major	Mech., Chem. Analysis	One per Lot/Batch /Heat	BHEL Spec / Approved Drawing		MTC	✓	2	-	1	
2.0 INPROCESS INSPECTION													
2.1		Mechanical Analysis (UTS, YS, EL)	Major	Mech. Analysis	One per Lot/Batch /Heat			MTC / TC	✓	2	2	1	
2.2		Visual, Dimensions, Markings, Finish etc.	Major	Visual, Measurement	100%			ITR	✓	2	2	1	
3.0 FINAL INSPECTION & TESTING													
3.1	Module Mounting Structures	Visual, Dimensions, Markings, Finish etc.	Major	Visual, Measurement	10%	BHEL Spec / Approved Drawing		IR	✓	2	1	-	
3.2		Galvanization [#] (Uniformity, Thickness of Coating)	Major	Measurement	One per Lot/Batch /Heat			TC/ITR	✓	2	1	-	# for Galvanized items
4.0 PRESERVATION & PACKING													
4.1		Painting (Shade, DFT) [#]	Major	Visual	Random	BHEL Spec / Approved Drawing		TC	✓	2		1	# as applicable
4.2		Packing [#]	Major	Visual	100%			Packing Slip	✓	2	-	1	#Seaworthy packing for export orders

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.

		TYPICAL MANUFACTURING QUALITY PLAN						MQP. NO.:					
								REV NO:		DATE:			
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032			PROJECT: PACKAGE: Module Mounting Structures BHEL TECH SPEC:			PAGE 2 OF 6					
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS

Notes:-

1. This Standard MQP should be read along with specification (Latest revision as per PO), approved drawings & approved datasheet (as applicable).
2. Specification/drawing/datasheet shall prevail over quality plan for contradiction if any.
3. 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	TC	–	Test Certificate
IR	-	Inspection Report	ITR	-	Internal Test Report
UTS	-	Ultimate Tensile Strength	YS	-	Yield Strength
EL.	-	Elongation	PMI	-	Positive Material Identification
MPI	–	Magnetic Particle Inspection	LPT	–	Liquid Penetrant Test
IBR	–	Indian Boiler Regulations	NDE	-	Non Destructive Examination
RT	-	Radiography Test	UT	-	Ultrasonic Test

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