

TD-201 Rev No. 00	Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE Rev No. 00 Page 1 of 3
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 attached is reference document and to use by successful bidder in future for preparation and submission of QAP for BHEL /CUSTOMER approval. 2. No deviation to reference document is acceptable.				

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<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) a) Visual check b) Dimensional check c) Mechanical and Chemical properties. d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.) e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc. 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. g) Verification of test certificate for protection class for the enclosures. h) Mechanical functioning of switches. i) Continuity of earthing and provision of earth points. j) Colour coding of wiring, size, tightness & dressing of wiring. k) Review of test certificates of assembled items, raw materials, internal test reports etc. l) Witness of functional checks, which may include mechanical run & electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc. m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc. n) Material identification (for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.) o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non Destructive Tests. 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) q) All tests as per BHEL Product Standard & approved drawings including Type tests and Routine tests on individual items and on System as a whole. r) For loose items test certificate or COC is required. s) Packing and Preservation. 16. QAP Format enclosed. 17. Typical Manufacturing QAP is 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:			PAGE 1 OF 1				
PRODUCT:			BHEL SPEC:			REV:							
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 QAP

Manufacturer's Name & Address:		MANUFACTURING QUALITY PLAN										
		Item : PLC SYSTEM OF FIRE DETECTION & PROTECTION SYSTEM. PLC & SCADA MAKE - HONEYWELL				QAP No: 9572-151-QVI-Q-006 REV NO: 03 DATE: 01-07-2016 PAGE: 1 OF 2		PROJECT : GADARWARA SUPER THERMAL POWER PROJECT - STAGE-I (2X800MW) MAIN SUPPLIER : LLOYD INSULATIONS INDIA LTD PACKAGE : FIRE DETECTION & PROTECTION SYSTEM				
SL	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF	QUANTUM	REFERENCE	ACCEPTANCE	FORMATS OF	Agency			REMARKS
NO	OPERATION	CHECKED		CHECK	OF CHECK	DOCUMENT	NORMS	RECORD	M CRPL	C LLOYD	N NTPC	
1	2	3	4	5	6	7	8	9				11
1	Material Inspection											
A	PLC Panel and I/O Panel (Enclosure)	Physical	Major	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings	Test Certificates from Manufacturer.	P	V	V	
		Painting	Minor	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings	Test Certificates from Manufacturer.	P	V	V	
		Enclosure Protection Class	Minor	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings	Test Certificates from Manufacturer.	P	V	V	
B	SCADA PC	Physical	Major	Visual	100%	NTPC Approved Datasheet	NTPC Approved Datasheet	Internal report by CRPL	P	V	V	
C	PLC Processor and PLC Modules (Make: Honeywell)	Physical	Major	Visual	Sample of each Type	NTPC Approved Datasheet	NTPC Approved Datasheet	Internal report by CRPL	P	V	V	
E	Printer	Physical	Major	Visual	100%	NTPC Approved Datasheet	NTPC Approved Datasheet	Internal report by CRPL	P	V	V	
F	Ethernet switch	Physical	Major	Visual	Sample of each Type	NTPC Approved Datasheet	NTPC Approved Datasheet	Internal report by CRPL	P	V	V	
G	Relay board	Physical	Major	Visual	Sample of each Type	NTPC Approved Datasheet	NTPC Approved Datasheet	Internal report by CRPL	P	V	V	
H	Terminal Block	Physical	Major	Visual	Sample of each Type	NTPC Approved Drawings	NTPC Approved Drawings	Internal report by CRPL	P	V	V	
I	GUI / HMI / SCADA & Software (Make: Honeywell)	Physical	Major	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings	Paper license	P	V	V	
J	FO CABLE	Physical	Major	Visual	100%	NTPC Approved Datasheet	NTPC Approved Datasheet	Internal report by CRPL	P	V	V	
2	Inprocess Inspection											
	Assemble cabinet of system and Wired panel of marshaling	General Layout and workmanship	Major	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings	Internal report by CRPL	P	V	V	
		Wiring cabinet	Major	Loop Check	Sample	CRPL Internal test Report	CRPL Internal test Report	Internal report by CRPL	P	V	V	
	IR Test	Electrical	Major	Functional	100%	CRPL Internal test Report	CRPL Internal test Report	Internal report by CRPL	P	V	V	
	HV Test	Electrical	Major	Functional	100%	CRPL Internal test Report	CRPL Internal test Report	Internal report by CRPL	P	V	V	
Legend :												
M: Manufacturer/ Sub-Contractor-CREATIVE ROBOTICS												
N: NTPC P: Perform												
C: Contractor - LLOYD W: Witness												
V: Verification of documents												
Reviewed by											Approval Seal	

Manufacturer's Name & Address:		MANUFACTURING QUALITY PLAN										
		Item : PLC SYSTEM OF FIRE DETECTION & PROTECTION SYSTEM. PLC & SCADA MAKE - HONEYWELL			QAP No: 9572-151-QVI-Q-006 REV NO: 03 DATE: 01-07-2016 PAGE: 2 OF 2		PROJECT : GADARWARA SUPER THERMAL POWER PROJECT - STAGE-I (2X800MW) MAIN SUPPLIER : LLOYD INSULATIONS INDIA LTD PACKAGE : FIRE DETECTION & PROTECTION SYSTEM					
SL	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF	QUANTUM	REFERENCE	ACCEPTANCE	FORMATS OF	Agency			REMARKS
									M	C	N	
NO	OPERATION	CHECKED		CHECK	OF CHECK	DOCUMENT	NORMS	RECORD	CRPL	LLOYD	NTPC	11
3	Final Inspection											
A	Entire system comprising of processor IO modules power supply IO rack and other interface module as per the drawing approval	Operation check as per FAT procedure	Major	Functional	100%	NTPC Approved Drawings	NTPC Approved Drawings	FAT record sign off as per CRPL standard	P	W	W	
B	Dimentional and Mechanical Check (Paint Shade & Thickness)	As per FAT procedure	Major	Visual	100%	NTPC Approved Drawings	NTPC Approved Drawings	Internal report by CRPL	P	W	W	For Paint Shade & Paint Thickness, Manufacturer TC to be provided.
C	BOM Check	Quantity Verification	Major	visual	100%	NTPC Approved BOM	NTPC Approved BOM	NTPC Approved BOM	P	W	W	
D	PLC Power Check	As per FAT procedure	Major	Functional	Sample	NTPC Approved FAT	NTPC Approved FAT DOC NO. - 9572-151-PVI-W-001	FAT record sign off as per CRPL standard	P	W	W	
E	PLC Power Supply Redundency Check	As per FAT procedure	Major	Functional	100%	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
F	PLC IO Communication Redundency Check	As per FAT procedure	Major	Functional	100%	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
G	PLC Processor Redundency Check	As per FAT procedure	Major	Functional	100%	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
H	Ethernet Switch Redundency Check	As per FAT procedure	Major	Functional	100%	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
G	Input Output Check	As per FAT procedure	Major	Functional	100%	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	10% TO BE WITNESS.
H	Seantime and Battery backup Test	As per FAT procedure	Major	Functional	100%	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
G	SCADA alarm Check	As per FAT procedure	Major	Functional	Sample	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
H	Security level check	As per FAT procedure	Major	Functional	Sample	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
G	Functional logic check	As per FAT procedure	Major	Functional	Sample	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
L	HMI Graphics check	As per FAT procedure	Major	Visual	Sample	NTPC Approved FAT		FAT record sign off as per CRPL standard	P	W	W	
Legend :												
M: Manufacturer / Sub-Contractor-CREATIVE ROBOTICS												
N: NTPC							P: Perform					
C: Contractor - LLOYD							W: Witness					
							V: Verification of documents					
							Reviewed by					
							Approval Seal					