

Bharat Heavy Electricals Limited
Ranipet-632406, India.
Quality Assurance(Mech)

To,

Shri V Raghupathy, Sr.Mgr. /FGD-Purchase

FGD: BONGAIGAON: RC Pump/QA-MECH: 122

Dt. 24-07-2020

INDENT NO:	RFW00832	RFW00836	RFW00837	RFW00899
PGMA	FW212	FW212 <i>spandhi</i>	FW212	FW997
Project Details	BONGAIGAON 3X250 MW (Unit-I, Unit-II, Unit-III)			
ENGG. SPEC.	BONGAIGAON:WS:ARP:ROS9070 Rev.00 DT: 18/07/2020			
Purchase TR:	Bong-G305/G306/G307 DT:18.07.2020			
Item:	Absorber Recirculation Pumps & Accessories			

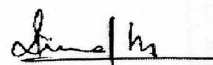
"NTPC has informed that in case of the item covered under Sub-QR list, the proposed vendor s for same item shall be accepted by QA after acceptance of Vendor by NTPC Engg"

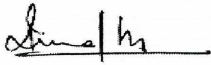
Quality department comments as follows:

1. Inspection and testing shall be done as per approved Quality plan which is to be approved by customer (NTPC)
2. Painting shall be done as per Customer approved Painting scheme.
3. As RC pumps for Bongaigaon project comes under Sub-QR category, hence on receipt of sub-QR clearance from NTPC Engg. by our Engg., same vendor will be accepted by QA also.
4. Arrange MQP from Sub-QR cleared vendor for taking up with NTPC for their approval. The Typical MQP (SQP No. FGS: 723/00 DT:12.02.2019) is already available in the purchase file itself. This MQP is indicative only and actual Quantum of check/Stage may differ based on Project/Customer requirements.
5. All the slurry pumps will be inspected at supplier's work as per Approved QP / Approved drawing/Approved datasheet and specification.
6. Annexure-Q shall be a part of the enquiry file.
7. Vendor shall confirm following for inspection purpose.
 - a. Latest version of standards & Specification shall be applied.
 - b. Materials shall be procured in compliance to Functional Technical Specification.
 - c. Gauges and measuring instruments with valid calibration only shall be used.
 - d. Inspection / Inspection wavier / approval by BHEL does not absolve Supplier's responsibility for conformity of the specification as per the terms of PO.
 - e. BHEL /BHEL Authorized representatives shall have the right to witness the necessary inspection and testing of goods mentioned in the PO.
 - f. In case of Vendor Drawing & Datasheet, it needs approval by BHEL Engineering.
 - g. This QP shall be read along with relevant PO, BHEL Specification / Drawing / Approved Datasheet

Spandhi
24.07.2020
Sanjib Pandit

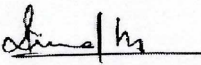
Rakesh Kumar Madhu
24/07/2020

 Ranipet		MANUFACTURER'S NAME AND ADDRESS M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU		STANDARD QUALITY PLAN										
		ITEM: RECIRCULATION PUMP SYSTEM: FGD						QP NO		FGS:723				
								REV. NO:		00				
								DATE:		12.02.2019				
								PAGE NO:		Page 1 of 3				
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N					M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D*	** 10.			11.
1.0 RAW MATERIALS														
1.1	Volute Casing, Casing Cover	Chemical & Mechanical Properties	Major	Composition analysis & Mechanical Properties test	1 Sample / Heat		Approved GA Drawing / Data Sheet/ Specification		MTC	✓	P	V	V	
1.2	Impeller, Wear Plate SS	Chemical & Mechanical Properties	Major	Composition analysis & Mechanical properties test	1 Sample / Heat		Drawing & Specification		MTC	✓	P	V	V	
1.3	Volute Casing	Surface Defects	Major	DPT on machined surface	100%		ISO4987	ASME Sec V	DPT Report	✓	P	V	V	
1.4	Shaft	Chemical Composition	Major	Chemical composition	1 Sample/Heat		Drawing/Specification		Test Report	✓	P	V	V	
		Mechanical Properties		Mechanical Tests			Drawing/Specification		Test Report	✓	P	V	V	
		Hardness Test		Mechanical Hardness	100%		Drawing/Specification		Test Report	✓	P	V	V	
		Internal Soundness		UT	100%		ASTM A 388/	ASME Sec V	UT Report	✓	P	V	V	
		Surface & Sub Surface Defects		MT-on m/c Surface	100%		ASTM E709	ASME Sec V	MT Report	✓	P	V	V	MT-Magnetic Particle Test
1.5	Impeller	Surface & Sub Surface Defects	Major	DPT	Accessible Areas		ISO4987	ASME Sec V	PT Report	✓	P	V	V	
2.0 IN PROCESS INSPECTION														
2.1	Impeller/Volute Casing/ Wear Plate	Surface Condition/ Defects/	Major	Visual and Measurement	100%		Drawing		IR (Protocol)		P	-	-	Spot Check by BHEL
LEGEND: * RECORD, IDENTIFIED WITH "TICK" (✓) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE. M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR. N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS MA: MAJOR AND MI: MINOR							PREPARED BY  Rakesh Kumar Madhu,(SEr/QA)			REVIEWD & APPROVED BY  K C Gandhi Parimalam,(DGM/QA)				

 Ranipet		MANUFACTURER'S NAME AND ADDRESS M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU		STANDARD QUALITY PLAN										
				ITEM: RECIRCULATION PUMP SYSTEM: FGD						QP NO		FGS:723		
										REV. NO:		00		
										DATE:		12.02.2019		
								PAGE NO:		Page 2 of 3				
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N				D*	M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D*	** 10.			11.
	SS/ Casing Cover/ Shaft After Machining	Measurement												
2.2	Couplings/Other Parts/Semi finished Products	Verification	Major	Compliance With Order	100%		Drawing		COC		P	-	-	Spot Check by BHEL
2.3	Rotating Parts	Balancing	Major	Static & Dynamic Balancing	100%		ISO 1940	ISO 1940, grade 2.5	Balancing Report	√	P	V	V	
2.4	Volute Casing	Water Pressure (Static) Testing	Major	Static Pressure Testing of Casing	100%		See Remarks Column	No Leakage	Test Report	√	P	W	W	Test Pressure at 2x rated head or 1.5x shut of head whichever is higher for 30min
3.0 FINAL INSPECTION														
3.1	Complete Pump Assembly	Completeness	Major	Visual & Dimensional	100%		Manufacturer Drawing		IR	√	P	W	W	
		Measurement- Flow vs Head(Complete operating range), Power, Efficiency	Major	Performance testing of pump	100%	*	Approved Drawing /Data Sheet		Performance Test Report	√	P	W	W	
		Vibration Velocity RMS [MM/S] Bearing Temperature Noise		Measurement	100%	*	Approved Drawing. Approved Data Sheet		Performance Test Report	√	P	W	W	
LEGEND: * RECORD, IDENTIFIED WITH "TICK" (√) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE. M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR. N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS MA: MAJOR AND MI: MINOR							PREPARED BY  Rakesh Kumar Madhu,(SEr/QA)			REVIEWD & APPROVED BY  K C Gandhi Parimalam,(DGM/QA)				

SL. NO		COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
1.		2.	3.	4.	5.	M	C/N	7.	8.	9.	D*	** 10.			11.
			Level RMS[MM/S]												
			NPSH Test	Major	Measurement	1 Pump / each type / design		Design Standard of Pump	NPSH Test Report	✓	P	W	W		
3.2			Leakage Test	Major	Leakage Testing	100 %	*	Approved Ga Drawing & Data Sheet	IR	✓	P	W	W		
3.3			Strip Down Test Not Required If Performance Test is Fine	Major	Visual	100%		Mfg. Drawing, Approved Data Sheet		✓	P	W	W	Only Required in case of Abnormal Sound	
3.4	Painting		Dry Film Thickness/Color	Major	Visual & Measurement	Spot Check		Approved Painting Scheme	IR(Protocol)	✓	P	V	V		
4	DOCUMENTATION														
4.1	Check of Quality Assurance Documentation		Compliance to MQP	Major	Check of Complements	100%		Manufacturing Quality Plan	Protocol	✓	V	V	V		

NOTE: Electrical Motor for Recirculation Slurry Pump is in BHEL Bhopal Scope. Separate MQP to be submitted for Motor.

LEGEND: * RECORD, IDENTIFIED WITH "TICK" (✓) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE. M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR. N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS MA: MAJOR AND MI: MINOR	PREPARED BY  Rakesh Kumar Madhu,(SEr/QA)	REVIEWD & APPROVED BY  K C Gandhi Parimalam,(DGM/QA)
---	--	--