



### Sample QP for Grinding Mill


 <b>Ranipet</b>	MANUFACTURER'S NAME AND ADDRESS		<b>STANDARD QUALITY PLAN</b>											
	<b>M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU</b>		<b>ITEM: WET LIMESTONE GRINDING MILL</b> <b>SYSTEM: FGD</b>						<b>QP NO</b>		<b>FGS:726</b>			
			<b>REV. NO</b>		<b>00</b>									
			<b>DATE</b>		<b>22.02.2019</b>									
<b>PAGE NO</b>		<b>Page 1 of 8</b>												
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.

<b>A</b>	<b>MILL SHELL:</b>													
<b>A-1</b>	<b>RAW MATERIAL INSPECTION</b>													
1.1	Plates/Rolled Sections/Forged Bars	Surface Condition, Dimensions.	Major	Visual, Measurement	100%	Drawing & Data Sheet	-	-	P	-	-			
1.2	Plates/Rolled Sections Forged Bars etc.	Chemical & Mechanical Properties	Major	Chemical Analysis; Mechanical Testing	1 Sample/Heat	Drawing & Data Sheet	Test Certificate/ COC	√	P	V	V			For > 25mm Thick/Dia TCs, Below it COC.
1.3	Plates/Rolled Sections/Forged Bars Etc. Of Thickness ≥ 40mm	Internal Defect-Lamination	Major	UT	100%	ASTM A 435 /	Test Report	√	P	V	V			
						Relevant Standard								
<b>A-2</b>	<b>FITTING /WELDING</b>													
2.1	WPS,PQR, List of Qualified Welders With WPQ	Welding Parameters, Welder Qualification	Major	Review	100%	ASME Sec IX	WPS, PQR, WPQ	-	P	V	-			
2.2	Dimensional Control	Dimension	Major	Measurement	100%	Drawing / Data Sheet	Dimensional Report	√	P	V	V			
2.3	Check of Surface	Surface Control	Major	Measurement	100%	Drawing/ Data Sheet	Test Certificate	√	P	V	V			

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)**


 <b>Ranipet</b>	MANUFACTURER'S NAME AND ADDRESS <b>M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU</b>		<b>STANDARD QUALITY PLAN</b>											
	<b>ITEM: WET LIMESTONE GRINDING MILL SYSTEM: FGD</b>						<b>QP NO</b>		<b>FGS:726</b>					
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1.	2.	3.	4.	5.	6.		7.	8.	9.	D*	** 10.			11.

2.4	Shell Full Welding	Weld Defects	Major	MT	100%	ASME Section-V	Relevant Standard	Report	√	P	V	V	
				UT	100%	-do-	ASME Sec-VIII, UW 51	Report	√	P	V	V	
2.5	Heat Treatment of Mill Shell	Heat Treatment	Major	Review	100%	Heat Treatment Procedure		HT CHART	√	P	V	V	
<b>A-3 PAINTING</b>													
3.1	Painting	Appearance, DFT	Major	Visual and Measurement	100%	NTPC Approved Painting Specification		Test Report	√	P	V	-	
<b>B MILL HEAD</b>													
<b>B-1 RAW MATERIAL INSPECTION</b>													
1.1	MATERIAL	Chemical & Mechanical Properties	Major	Chemical & Mechanical Properties	100%	Drawing/Data Sheet		Test Certificate	√	P	V	V	
1.2	MATERIAL	Surface Defects	Major	Visual	100%	Drawing / Data Sheet		MTC	√	P	V	V	
<b>B-2 MACHINING</b>													
2.1	Rough Machining	Internal Defects	Major	UT	100%	ASTM A 435/		UT Report	√	P	V	V	
2.2	Final Machining	Surface Defects	Major	MT	100%	ASME Section-V	Relevant Standard	Test Report	√	P	V	V	
<b>B-3 ANNEALING</b>													
3.1	Annealing(If applicable)	Heat Treatment Chart	Major	Review of HT Chart	100%	Manufacturer Procedure		HT Chart	√	P	V	V	
<b>B-4 DIMENSIONAL CHECKS</b>													
4.1	Dimension and Surface Control	Dimensions, Surface Roughness	Major	Measurement	100%	Drawing / Data Sheet		Report	√	P	V	V	

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**MA:** MAJOR AND **MI:** MINOR


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	<b>ITEM: WET LIMESTONE GRINDING MILL SYSTEM: FGD</b>						<b>QP NO</b>		<b>FGS:726</b>					
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<b>B-5 PAINTING</b>													
5.1	Painting	DFT and Appearance	Major	Visual & Measurement	100%	NTPC Approved Painting Specification		Test Report	√	P	V	V	
<b>C DRIVE TRUNION</b>													
<b>C-1 RAW MATERIAL INSPECTION</b>													
1.1	Plates / Rolled Sections / Forged Bars.	Surface Condition, Dimensions	Major	Visual, Measurement	100%	Drawing / Data Sheet		-	-	P	-	-	
1.2	Plates / Rolled Sections / Forged Bars.	Chemical & Mechanical Properties	Major	Chemical & Mechanical Properties	100%	Drawing / Data Sheet		Test Certificate	√	P	V	V	For > 25mm Thick/Dia TCs, Below it COC
1.3	Plates / Rolled Sections / Forged bars of thickness ≥40mm	Internal Defect-Lamination	Major	UT	100%	ASTM A435 / (For Plates)	ASTM A 435	Test Report	√	P	V	V	
						ASTM A609	Relevant Standard						
<b>C-2 WELDING</b>													
2.1	WPS, PQR, List of Qualified Welder With WPQ	Welding Parameters, Welder Qualification	Major	Review	100%	Drawing / Data sheet / Relevant Standard		WPS; PQR; WPQ	-	P	V	-	
2.2	Full Welding Inspection	Weld Defects	Major	RT(For BUTT WELD)	10%	ASME Section-V	ASME Section VIII, UW 51	Report	√	P	V	V	
				MT	100%	ASME Section-V	ASME Section VIII, UW 51	Report	√	P	V	V	

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2.3	Heat Treatment	Heat Treatment	Major	Review	100%	Manufacturer Heat Treatment Procedure		HT Chart	√	P	V	V	
<b>C-3 DIMENSIONAL CHECK</b>													
3.1	Dimension and Surface Control	Dimensional Surface Roughness	Major	Measurement	100%	Drawing / Data Sheet		Report	√	P	V	V	
<b>C-4 PAINTING</b>													
4.1	Painting	DFT and Appearance	Major	Visual and Measurement	100%	NTPC Approved Painting Specification		Test Report	√	P	V	-	
<b>D BASE FRAMES</b>													
1.1	Plates / Rolled Sections / Forged Bars.	Chemical & Mechanical Properties	Major	Chemical & Mechanical Properties	100%	Drawing / Data sheet / Relevant Standard		Test Certificate/ COC	-	P	V	-	
		UT of Plates thickness > 40mm	Major	UT	100%	ASTM A 435 / (For plates)	ASTM A 435 /	Test Report	√	P	V	V	
1.2	Welding	Weld Defects	Major	MT	100%	ASME Section-V	Relevant Standard	Test Report	√	P	V	V	
1.3	Dimension Control of Mill Base Frame	Dimensions Flatness	Major	Measurement	100%	Drawing / Data Sheet		Report	√	P	V	V	
1.4	Dimensional Control of Mill Drive Frame	Dimensions, Flatness	Major	Measurement	100%	Drawing / Data Sheet		Report	√	P	V	V	
1.5	Painting	DFT and Appearance	Major	Visual And Measurement	100%	NTPC Approved Painting Specifications		Test Report	√	P	V	V	

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E	MILL TRUNNION BEARING													
1.1	Plates / Rolled Sections / Forged Bars etc.	Chemical & Mechanical Properties	Major	Chemical & Mechanical Properties	100%	Drawing / Data Sheet		Test Certificate/ COC	-	V	V	-		
		UT of Plates thickness > 40mm	Major	UT	100%	ASTM A 435 / Gb 2970 (For Plates)	ASTM A 435 / GB 2970	Test Report	√	P	V	V		
2.2	Bearing Bush	Chemical & Mechanical Properties	Major	Chemical & Mechanical Properties	100&%	Drawing / Data Sheet		Test Certificate/ COC	-	V	V	-		
2.3	Welding Inspection	Weld Defects	Major	MT	100%	ASME Section V	Relevant Standard	Test Report	√	P	V	V		
2.4	Dimension and Surface Control of Bearing Housing and Bush	Dimensions; Surface Roughness	Major	Measurement	100%	Drawing / Data Sheet		Dimensional Report	√	P	V	V	Refer Drawing / Documents	
2.5	Painting	DFT and Appearance	Major	Visual and Measurement	100%	Approved Painting Specification		Test Report	√	P	V	V		
F	GEAR BOX													
1.1	Raw Material Inspection of Forgings / Castings	Chemical Test Mechanical Test	Major	Chemical Analysis Mechanical Tests	1 sample / Heat	Material Specification as per Approved Drawing / Data Sheet		TC	√	P	V	V		

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 Ranipet	MANUFACTURER'S NAME AND ADDRESS <b>M/S BHEL: BAP: RANIPET</b> <b>632 406</b> <b>TAMIL NADU</b>		<b>STANDARD QUALITY PLAN</b>											
	<b>ITEM: WET LIMESTONE GRINDING MILL</b> <b>SYSTEM: FGD</b>							<b>QP NO</b>		<b>FGS:726</b>				
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							<b>PAGE NO</b>		<b>Page 6 of 8</b>					
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		UT Forgings thickness / diameter > 25mm	Major	NDT-UT	100%	ASTM A-388	Relevant Standard	UT Report	√	P	V	V	
1.2	After Heat Treatment of Gear / Pinion	Hardness	Major	Measure	100%	Approved Drawing / Data Sheet / Manufacturer Standard		IR	√	P	V	V	
1.3	Run Test-Gear box	1)Noise Level 2)Vibration 3)Temperature Rise 4)Leak Tightness of Gear Housing 5)Speed Ratio	Major	Measure	100%	Drawing / Data Sheet / Manufacturers Standard		Test Report	√	P	W	V	1)Noise level shall be limited to 90dB at 1m Distance 2)Temperature Rise in Oil Shall be Limited to 40°C above Ambient temperature
<b>G</b>	<b>LUB OIL SYSTEM</b>												
1.1	1)Flow 2)Pressure 3)Clogging Indicator(Filter) 4)Cooler Function	Dimension Measurement	Major	Review	100%	Drawing / Data Sheet		Test Report	√	P	W	V	

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<b>H</b>	<b>GRINDING BALL</b>												
1.1	1)Dia. Tolerance 2)Cracks 3)Hardness (Surface & Volume) 4)Material Property 5)Drop Test	Chemical, Physical, Dimension	Major	Visual & Measure	As per Sampling Plan	Drawing / Data Sheet / Manufacturers Standard	Certificate of compliance (COC)	√	P	V	V		
<b>I</b>	<b>INCHING DRIVE MOTOR</b>												
1.1	Make Type, Rating	Visual	Major	Review	100%	Drawing / Data Sheet	COC	√	P	V	V		
<b>J</b>	<b>MILL RUBBER LINING</b>												
1.1	Rubber Composition	Material Content	Major	Measurement	1/Batch	Manufacturer Standard	Insp Report	√	P	V	V		
1.2	Rheometer Test	Physical Property (Fluidity / Viscosity)	Major	Measurement	1/Batch	Manufacturer Standard	Insp Report	√	P	V	V		
1.3	Hardness Check After Vulcanizing	Hardness	Major	Measurement	1/Batch	Manufacturer Standard	Insp Report	√	P	V	V		
1.4	First Piece Inspection	Compliance to Specification	Major	Visual Measurement	100%	Manufacturer Standard	Insp Report	√	P	V	V		

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K	BALL MILL ASSEMBLY												
1.1	Final Dimension	Dimensional & Completeness	Major	Visual Dimensional	100%	Drawing / Data Sheet	Test Report	√	P	W	W		
	Quality Dossier	Compilation of Reports	Major	Document	100%	Drawing/ Data Sheet	Test Report	√	P	V	V		

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

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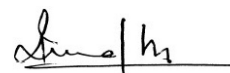
## Sample QP for Slurry Pump

 <b>Ranipet</b>	MANUFACTURER'S NAME AND ADDRESS		<b>STANDARD QUALITY PLAN</b>											
	<b>M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU</b>		<b>ITEM: SLURRY PUMP SYSTEM: FGD</b>					QP NO		FGS:724				
								REV. NO:		00				
								DATE:		12.02.2019				
PAGE NO:		Page 1 of 3												
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1.0 RAW MATERIAL													
1.1	a) Volute Casing b) Wear Plate c) Impeller	Chemical & mechanical properties	Major	Composition analysis & mechanical properties test	1 Per Heat No	Approved GA Drawing / Data Sheet		Raw Material TC/COC	√	P	V	V	Tensile Test Is Applicable For Volute Casing Only.
1.2	Shaft	1)Chemical Composition 2)Mechanical Properties	Major	Composition analysis & mechanical properties test	1 Per Heat No	Approved GA Drawing / Data Sheet		Material Test Report	√	P	V	V	
		UT Test	Major	NDT	100%	ASTM A 388	ASME Sec V	Test Report	√	P	V	V	Shafts Ø40mm are UT tested.
2.0 IN PROCESS INSPECTION													
2.1	Impeller	Surface Defect	Major	DPT on machined surfaces	100%	ASTM E 165	ASME Sec V	Insp Report	√	P	V	V	
	Shafts after machining	Surface Defect	Major	DPT	100%	ASTM E 165	ASME Sec V	Insp Report	√	P	V	V	
2.2	Impeller & Shaft	Residual Unbalance	Major	Static & Dynamic Balancing	100%	Relevant Standard/ISO 1940 Gr 2.5		Insp Report	√	P	V	V	
2.3	Casing	Soundness	Major	Hydrostatic test	100%	No leakage		Insp Report	√	P	V	V	At 200% Of Pump Rated

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			<b>ITEM: SLURRY PUMP SYSTEM: FGD</b>					<b>QP NO</b>		<b>FGS:724</b>				
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								<b>DATE:</b>		<b>12.02.2019</b>				
								<b>PAGE NO:</b>		<b>Page 2 of 3</b>				
<b>SL. NO</b>	<b>COMPONENT &amp; OPERATIONS</b>	<b>CHARACTERISTICS</b>	<b>CLASS</b>	<b>TYPE OF CHECK</b>	<b>QUANTUM OF CHECK</b>		<b>REFERENCE DOCUMENT</b>	<b>ACCEPTANCE NORMS</b>	<b>FORMAT OF RECORD</b>		<b>AGENCY</b>			<b>REMARKS</b>
					<b>M</b>	<b>C/N</b>			<b>M</b>	<b>D*</b>	<b>C</b>	<b>N</b>	<b>** 10.</b>	
<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>	<b>5.</b>	<b>6.</b>		<b>7.</b>	<b>8.</b>	<b>9.</b>	<b>D*</b>	<b>** 10.</b>			<b>11.</b>
														Head Or 150% Of Shut Off Head, Whichever Is Higher, for at least 30min.
2.4	Motor	Make, Type, Rating	Major	Visual	100%		Approved Drawing / Data Sheet	Routine Test Report/C OC	√	P	V	V		Motor Up to 30kw COC Will Be Provided.
<b>3.0 FINAL INSPECTION</b>														
3.1	Complete Pump	Dimensions	Major	Measurement & Visual	100%		Manufacturer Drawing	Inspection Report	√	P	W	W		
3.2	Performance Test	1)Flow, Head, Efficiency, BHP at Rated Speed 2)Vibration and Noise Level 3)Leakage Test	Major	Measurement & Visual	100%	1/mod el	Approved Drawing / Data Sheet	Insp Report	√	P	W**	W*		
		Strip Down Test Not Required If Performance Test Is Fine	Major	Visual	100%	1/mod el	Mfg. Drawing, Approved Data Sheet		√	P	W	W		Only Required in Case of Abnormal Sound

**LEGEND: \* RECORD, IDENTIFIED WITH "TICK" (√) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE.**  
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**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)**

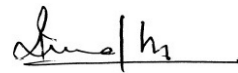
 <b>Ranipet</b>		<b>MANUFACTURER'S NAME AND ADDRESS</b>  <b>M/S BHEL: BAP: RANIPET</b> <b>632 406</b> <b>TAMIL NADU</b>		<b>STANDARD QUALITY PLAN</b>										
				<b>ITEM: SLURRY PUMP</b> <b>SYSTEM: FGD</b>						QP NO		FGS:724		
										REV. NO:		00		
										DATE:		12.02.2019		
				PAGE NO:		Page 3 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.
3.3	Painting Check	DFT, Paint Shade	Major	Measurement And Visual	100%	Random	Approved Painting scheme	Insp Report	√	P	W	V	Quality Dossier To Be Submitted Finally.	

**NOTE:**

1. For Slurry Pump Motor Rating is 37KW and motor make NTPC/BHEL Approved source.
2. Routine test report duly witnessed by main contractor as per applicable standard shall be reviewed during inspection (more than 30KW Rating).

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## Sample QP for Agitator

 <b>Ranipet</b>	MANUFACTURER'S NAME AND ADDRESS	<b>STANDARD QUALITY PLAN</b>												
	<b>M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU</b>	<b>ITEM: AGITATOR</b>						<b>QP NO:</b>		<b>FGS: 720</b>				
		<b>SYSTEM: FGD</b>						<b>REV. NO:</b>		<b>00</b>				
								<b>DATE:</b>		<b>12.02.2019</b>				
						<b>PAGE NO:</b>		<b>Page 1 of 2</b>						
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N			9.	D *	M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D *	** 10.			11.

**1.0 RAW MATERIAL INSPECTION**

1.1	All materials including casting & forgings	Chem. & Mech. Dimensions Surface Defects	MA MA MA	Review of MTC Measurement Visual	1/Heat 100%	1/Heat -	As per spec. & Appd. Dwg	TC IR IR	√	P P P	V -	V -	V -	
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**2.0 MOTOR : REVIEW OF MANUFACTURE TEST CERTIFICATE**

**3.0 IN PROCESS INSPECTION**

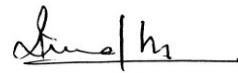
3.1	Welding Qualifications	WPS & PQR	MA	WPS, PQR & WPQ	100%		ASME Sec IX	IR	√	P	V	V	Recent qualified WPS, PQR and WPQ shall be submitted for review during inspection
3.2	Marking, Cutting, Edge Preparation Tacking	Dimensions	MA	Measurement	100%	-	Appd.Dwg.	IR		P	-	-	
3.3	Welds	Dimensions & Surface Quality	MA	Measurement	100%		Appd.Dwg.& ASME Sec VIII	IR	√	P	W	V	
3.4	Machining of Components	Dimensions Surface Defects	MA	Measurement Visual	100%	-	Appd. Dwg.	IR		P P	- -	- -	
3.5	Impeller	Static balance test	MA	Measurement	100%		As per Specs.	TR	√	P	V	V	
3.6	Rubber Lining	Hardness test & Spark test	MA	Measurement	100%		As per Specs.	TR	√	P	W	V	
3.7	Assembly	Dimensions Completeness	MA	Measurement Visual	100%	100%	Appd.Drg.	IR	√	P P	V V	V V	

**4.0 FINAL INSPECTION**

4.1	Final Assembly	Overall Dimensions & Completeness	MA MA	Measurement Visual	100%	10%	Appd. Dwg	IR	√	P	W	V	*10% pf each type (Vertical / Horizontal)
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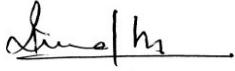

**REVIEWD & APPROVED BY**



**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.	6.		7.	8.	9.	D*	** 10.			11.
						M	C/N					M	C	N	
4.2		Free Air Run Test of complete assembly	Measurement Current, RPM, Noise & Vibration	MA	Measurement	100%	10%	Vendor Standard / Approved Drawing / Data Sheet		IR	✓	P	W	W	
4.3		Review of QA Documents	Verification of QA Documents	MA	Verification	100%	100%	As per Appd. MQP		IR		P	V	V	
<b>5.0</b>		<b>PAINTING &amp; PRESERVATION</b>													
5.1			Painting Material	MI	Review of MTC	100%		Appd. "Painting Procedure"/Approved Painting Schedule		IR	✓	P	V	-	
5.2			Surface treatment and inspection	MI	Visual	100%	-	-do-		IR	✓	P	-	-	
5.3			DFT Check	MI	Measurement	10%		-do-		IR	✓	P	V	-	
5.4			Painting Surface Quality	MI	Visual	100%		-do-		IR	✓	P	V	-	
<b>6.0</b>		<b>INSPECTION BEFORE DELIVERY</b>													
6.1		Packing	Size, appearance & firmness	MI	Measurement & Visual	100%		As per "Packing Procedure"		IR	✓	P	V	-	
6.2		Deliver Documents	Markings, Packing List & Details Packing List, etc., Check	MI	Verification	100%		As per "Packing Procedure"		IR	✓	P	V	-	

- NOTES:**
1. For Agitator Motor rating is 45KW and motor make NTPC/BHEL Approved source.
  2. Routine test report duly witnessed by main contractor as per applicable standard shall be reviewed during inspection (more than 30 KW Rating).

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