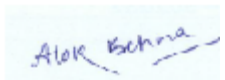
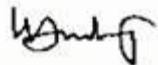
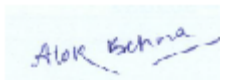
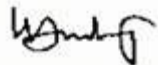
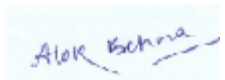
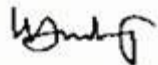


		BHEL HYDERABAD-32		STANDARD QUALITY PLAN				QP No. : HY/HE/10001/TITANIUM TUBES Rev. No.: 03 DATE : 16.12.2015 Page 1 of 5					
				ITEM: WELDED TITANIUM TUBES									
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
1	2	3	4	5	6	7	8	9		S	M	C	11
A	RAW MATERIALS & BOUGHT OUT ITEMS												
1.1	Inspection of strip chemical composition	Chemical composition	Major	Chemical	Each heat	HE51533 , REV.00	HE51533 , REV.00	Inspection certificate	✓	P	V	V	
B	IN PROCESS INSPECTION												
2.1	Heat treatment (online furnace)	Heat treatment condition	Major	Heat Treatment	100%	Approved HT chart	Approved HT chart	Inspection certificate	✓		P	V	
2.2	Hydrogen % in finished Tubes	Chemical Composition	Major	Chemical	Sample/Lot	HE51533 , REV.00	HE51533 , REV.00	Inspection certificate	✓		P	V	
C	FINAL INSPECTION & TESTING												
3.1	Eddy current inspection	Inspection of internal defects	Major	Eddy-current method	100%	ASME SB 338	HE51533 , REV.00	Inspection certificate	✓		P	W*	*Hold point 10% - online OR 100%- offline
3.2	Pneumatic testing under water	Inspection of tube soundness (leak tightness)	Major	By air under water.	100%	ASME SB 338	Any evidence of air leakage is not allowed	Inspection certificate	✓		P	W	Hold point
3.3	Hydrostatic Test	Inspection of tube soundness (leak tightness)	Major	Hydro	100%	ASME SB 338	No leakage	Inspection certificate			P	W	Note4

Drg No. : BHEL Drawing.	BHEL Spec. No.: HE51533,R-0	PREPARED BY	APPROVED BY
Legend: *D- Documents marked (✓) to be included by Supplier in Documentation Package. S - Sub Vendor M -Vendor / Manufacturer C -Customer (BHEL) / Inspection Agency		 ALOK BEHERA/SR.ENGR/QA	 KSN MURTHY/ AGM/QA

		BHEL HYDERABAD-32		STANDARD QUALITY PLAN				QP No. : HY/HE/10001/TITANIUM TUBES Rev. No.: 03 DATE : 16.12.2015 Page 2 of 5					
				ITEM: WELDED TITANIUM TUBES									
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	S	M	C	REMARKS
1	2	3	4	5	6	7	8	9	10				11
3.4	Ultrasonic inspection	Inspection of internal defects	Major	Ultrasonic inspection	100%	ASME SB 338	HE51533 , REV.00	Inspection certificate	✓		P	W	Hold point At random 10% by BHEL, 100% by vendor
3.5	Inspection of tube outer diameter and ovality	Inspection of tube outer diameter and ovality	Major	Measurement with micro meter and ring gauge along the length of the tube	100%	Drawing/P. O/BHEL specification	HE51533 , REV.00	Inspection Report	✓		P	W	----Do----
3.6	Wall thickness inspection	Wall thickness inspection	Major	Micro meter	100%	Drawing	HE51533 , REV.00	Inspection Report	✓		P	W	----Do----
3.7	Tube length inspection	Tube length inspection	Major	Measurement	100%	Drawing	HE51533 , REV.00	Inspection Report	✓		P	W	----Do----
3.8	Straightness inspection	Straightness inspection	Major	Line gage set of feeler gauges	100%	Drawing	HE51533 , REV.00	Inspection certificate	✓		P	W	----Do----
3.9	Inspection of internal and external weld reinforcement	Inspection of internal and external weld reinforcement	Major	Using micro meter in machine line projection optical device	10% 2 specimens per tube lot	Drawing	HE51533 , REV.00	Inspection certificate	✓		P	W	----Do----
3.10	Inspection of cut perpendicularity	Inspection of cut perpendicularity	Major	Precision squares set of feeler gauges	100%	HE51533 , REV.00	HE51533 , REV.00	Inspection Report	✓		P	W	----Do----
Drg No. : BHEL Drawing.			BHEL Spec. No.: HE51533,R-0			PREPARED BY			APPROVED BY				
Legend: *D- Documents marked (✓) to be included by Supplier in Documentation Package. S - Sub Vendor M - Vendor / Manufacturer C -Customer (BHEL) / Inspection Agency						P - Perform W - Witness V - Verify			 ALOK BEHERA/SR.ENGR/QA			 KSN MURTHY/ AGM/QA	

		BHEL HYDERABAD-32	STANDARD QUALITY PLAN						QP No. : HY/HE/10001/TITANIUM TUBES Rev. No.: 03 DATE : 16.12.2015 Page 3 of 5				
			ITEM: WELDED TITANIUM TUBES										
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
1	2	3	4	5	6	7	8	9		S	M	C	11
3.11	Tensile test	Determination of tensile strength , yield strength elongation	Major	Confirmation of welded tube mechanical properties	1 specimen per each HT batch or 125 tubes whichever is less	ASTM A 370	HE51533 , REV.00	Test Certificate	✓		P	W	
3.12	Flattening test	Flattening test	Major	Confirmation of welded tube mechanical properties	1 specimen per each HT batch or 125 tubes whichever is less	HE51533 , REV.00	Cracking is not allowed	Inspection Report	✓		P	W	
3.13	Reverse flattening test	Reverse flattening test	Major	Confirmation of welded tube mechanical properties	1 specimen per each HT batch or 125 tubes whichever is less	ASTM A 370	Cracking is not allowed	Inspection Report	✓		P	W	
3.14	Flare test	Flare test	Major	Confirmation of welded tube mechanical properties	1 specimen per each HT batch or 125 tubes whichever is less	HE51533 , REV.00	Cracking is not allowed	Inspection Report	✓		P	W	

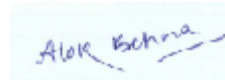
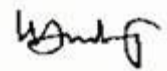
Drg No. : BHEL Drawing.	BHEL Spec. No.: HE51533,R-0	PREPARED BY	APPROVED BY
Legend: *D- Documents marked (✓) to be included by Supplier in Documentation Package. S - Sub Vendor M -Vendor / Manufacturer C -Customer (BHEL) / Inspection Agency		 ALOK BEHERA/SR.ENGR/QA	 KSN MURTHY/ AGM/QA

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		BHEL HYDERABAD-32	STANDARD QUALITY PLAN						QP No. : HY/HE/10001/TITANIUM TUBES Rev. No.: 03 DATE : 16.12.2015 Page 5 of 5				
			ITEM: WELDED TITANIUM TUBES										
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
1	2	3	4	5	6	7	8	9		S	M	C	
1	2	3	4	5	6	7	8	9		10			11
4.1	Packing & Marking	Control of tubes quantity in a box. Control of test certificates availability. Correctness of tubes packing accuracy of box identification	Each box	Conformation of tubes quantity in a box. Control of test certificates availability, correctness of tubes packing accuracy of box identification	Each Box	AA0490002	AA0490002	Inspection Report	✓		P	V	

Note:

- 1-In case of any discrepancies between BHEL approved specification/drawing and quality plan, the former will prevail.
- 2- Project specific requirements, if any, as per PO shall also be complied with.
- 3- All the requirements as per BHEL specification are to be complied with.
- 4- Hydrostatic Test is not applicable for Surface Condenser & Steam jet Air Ejector.

Drg No. : BHEL Drawing.	BHEL Spec. No.: HE51533,R-0	PREPARED BY	APPROVED BY
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