

Inspection and Test Plan for Water Tube Boiler

No.	INSPECTION AND TEST PLAN	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	ACTIVITY BY			REMARK
					MANUF.	TPI	CLIENT	
1	PRE-INSPECTION MEETING	SPEC.	SPEC.	MOM	H	H	H	
Before Manufacturing								
2	DWG, DESIGN, CALCULATION DOCUMENT	ASME, SPEC.	ASME, SPEC	DWG, CALCULATION BOOK	H	R	A	
3	WPS & PQR	ASME	ASME IX	WELDING BOOK	H	R	A	
4	WELDER QUALIFICATION CERTIFICATES	ASME	ASME IX	CERTIFICATES	H	R	-	
5	NDT PROCEDURE	ASME	ASME V,I, IX	PROCEDURES	H	R	A	
6	NDE PERSONAL CERTIFICATES	ASME	ASME V	CERTIFICATES	H	R	-	
7	PWHT PROCEDURE	ASME	ASME I	PROCEDURES	H	R	A	
8	HYDRO-STATIC TESTING PROCEDURE	ASME	ASME I	PROCEDURES	H	R	A	
9	PAINTING PROCEDURE	ASME	SPEC.	PROCEDURES	H	R	A	
Materials								
10	MATERIAL CERTIFICATES	ASME	ASME II	Original Material Certificates	H	H	-	
11	STORAGE OF RAW MATERIALS	ASME	ASME	-	H	SW	-	
12	VISUAL, DIMENTION AND MARKING CONTROL	ASME I	ASME I	REPORT	H	SW	-	
During Manufacturing-HP DRUM, C.B.D AND I.B.D TANK								

13	MATERIAL RECEIVING INSPECTION	ASME, DRAWING	-	MATERIAL CERTIFICATES	H	H	-	-
14	MARKING, CUTTING & ROLLING OF SHELL	DRAWING	-	-	H	SW	-	-
15	VERIFY DIMENSION OF HEAD	DRAWING	-	REPORT	H	W	-	-
16	FIT UP (HEAD TO SHELL)	DRAWING	-	REPORT	H	SW	-	-
17	WELDING INSPECTION	DRAWING, WPS/ PQR	-	REPORT	H	W	-	-
18	NOZZLE MARKING INSPECTION BEFORE HOLE OPENING	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	-
19	NON-DESTRUCTIVE EXAMINATION (INCL. RT FILMS)	NDE PROCEDURE	ASME SEC I	REPORT	H	SW	-	-
20	DIMENSION & VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	-
21	POST WELD HEAT TREATMENT	PWHT PROCEDURE	-	REPORT	H	SW/R	-	-
22	FULL R/T (ONLY STEAM DRUM)	NDE PROCEDURE	ASME SEC I	REPORT	H	SW/R	-	-
23	DIMENSION AND VISUAL INSPECTION OF INTERNAL	DRAWING	WITHIN TOLERANCE	REPORT	H	H	-	-
24	HYDROSTATIC TEST (AT SHOP)	HYDRO. TEST PROCEDURE	NO LEAK & DEFORM	REPORT	H	H	-	-
25	PAINTWG INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	-
26	FINAL DIMENSIONAL / VISUAL INSPECTION	INTERNATIONAL STD.	-	REPORT	H	H	-	-

27	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT, REVIEW, LOADING)	PACKING PROCEDURE	-	Packing List	H	H	-	
FINNED TUBES								
28	MATERIAL RECEIVING INSPECTION	ASME, DRAWING	-		H	H	-	
29	DIMENSIONAL / VISUAL INSPECTION	INTERNATIONAL STD.	-		H	SW	-	
30	FINNING INSPECTION	DRAWINGS	-		H	SW	-	
HEADERS								
31	MATERIAL RECEIVING INSPECTION	ASME, DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
32	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	
33	HEADER DRILLING	DRAWING	-	REPORT	H	SW	-	
34	MARKING & CUTTING	DRAWING	-	REPORT	H	SW	-	
35	FIT UP (HEADER TO TUBE)	DRAWING	-	REPORT	H	SW	-	
36	WELDING INSPECTION	DRAWING, WPS/ PQR	-	REPORT	H	W	-	
37	NON-DESTRUCTIVE EXAMINATION	NDE PROCEDURE	-	REPORT	H	SW	-	
38	FINAL DIMENSIONAL / VISUAL INSPECTION	INTERNATIONAL STD.	-	REPORT	H	H	-	
TUBE BUNDLE ASSEMBLY WITH CASING								

39	VERIFY PROPER SPECIFIED PARTS FOR ASS'Y	ASME, DRAWING	-	REPORT	H	R	-	
40	MATERIAL RECEIVING INSPECTION	DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
41	VERIFY LENGTH OF HARPS	DRAWING	-	REPORT	H	SW	-	
42	FIT-UP INSPECTION (TUBE TO HEADER)	DRAWING	-	REPORT	H	SW	-	
43	WELDING INSPECTION	WPS/PQR, DRAWING	-	REPORT	H	W	-	
44	NON-DESTRUCTIVE EXAMINATION (MT/PT,RT)	NDE PROCEDURE	ASME SEC. I	REPORT	H	SW	-	
45	DIMENSIONAL / VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	W	-	
46	POST WELD HEAT TREATMENT	PWHT PROCEDURE	-	REPORT	H	R	-	
47	HYDROSTATIC TEST (AT SHOP)	HYDRO. TEST PROCEDURE	NO LEAK & DEFORM	REPORT	H	H	-	
48	CASING FIT-UP INSPECTION	DRAWING	-	REPORT	H	SW	-	
49	CASING WELDING INSPECTION	WPS/PQR, DRAWING	-	REPORT	H	SW	-	
50	INSULATION	DRAWING	-	REPORT	H	SW	-	
51	PAINTING (MODULE BOX)	PAINTING SPEC.	-	REPORT	H	W	-	
52	FINAL DIMENSIONAL & VISUAL INSEPCTION (MODU LE BOX)	DRAWING	WITHIN TOLERANCE	REPORT	H	H	-	
53	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT, REVIEW, LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	

54	MATERIAL RECEIVING INSPECTION	DRAWING		MATERIAL CERTIFICATES	H	H	-	
55	DIMENSIONAL / VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	
56	INTERFACE OPENING DIMENSION INSPECTION	DRAWING	-	REPORT	H	SW	-	
57	FIT-UP INSPECTION	DRAWING	-	REPORT	H	SW	-	
58	WELDING INSPECTION	WPS/PQR, DRAWING	-	REPORT	H	W	-	
59	NON-DESTRUCTIVE EXAMINATION (IF ANY)	NDE PROCEDURE	-	REPORT	H	SW	-	
60	INSULATION	DRAWING	-	REPORT	H	SW	-	
61	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
62	FINAL DIMENSIONAL & VISUAL INSEPTION	DRAWING	WITHIN TOLERANCE	REPORT	H	H	-	
63	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
DIVERTER DAMPER, BLANKING PLATE & SEAL AIR FAN								
64	DOCUMENT STATUS WITH APPROVAL STATUS	DOCUMENTS	-	REPORT	H	R	-	
65	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
66	DIMENSIONAL / VISUAL INSPETION	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	
67	FUNCTIONAL TEST	TEST PROCEDURE	-	REPORT	H	H	-	

68	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
69	FINAL DIMENSIONAL & VISUAL INSEPCTION	DRAWING	WITHIN TOLERANCE	REPORT	H	H	-	
70	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
STEAM VENT SILENCER								
71	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
72	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	
73	WELDING INSPECTION (IF ANY)	WPS/PQR, DRAWING	-	REPORT	H	W	-	
74	NON-DESTRUCTIVE EXAMINATION (IF ANY)	NDE PROCEDURE	-	REPORT	H	SW	-	
75	NOISE ABSORPTION TEST	PROCEDURE	-	REPORT	H	H	-	
76	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
77	FINAL DIMENSIONAL & VISUAL INSPECTION	DRAWING	-	REPORT	H	H	-	
78	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
GAS SILENCER								
79	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H		

80	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	
81	WELDING INSPECTION (IF ANY)	WPS/PQR, DRAWING	-	REPORT	H	W	-	
82	NON-DESTRUCTIVE EXAMINATION (IF ANY)	NDE PROCEDURE	-	REPORT	H	SW	-	
83	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
84	FINAL DIMENSIONAL & VISUAL INSPECTION	DRAWING	-	REPORT	H	H	-	
85	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
DEAERATOR & STORAGE TANK								
86	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
87	MARKING, CUTTING & BENDING OF SHELL	DRAWING	-	REPORT	H	SW	-	
88	VERIFY DIMENSION OF HEAD	DRAWING	-	REPORT	H	W	-	
89	FIT UP (HEAD TO SHELL)	DRAWING	-	REPORT	H	SW	-	
90	WELDING INSPECTION	DRAWING, WPS/PQR	-	REPORT	H	W	-	
91	NOZZLE MARKING INSPECTION BEFORE HOLE OPENING	DRAWING & ASME SEC.I	WITHIN TOLERANCE	REPORT	H	W	-	
92	NON-DESTRUCTIVE EXAMINATION (IF REQUIRED)	NDE PROCEDURE	ASME SEC VIII	REPORT	H	SW	-	

93	DIMENSION & VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	
94	POST WELD HEAT TREATMENT (IF REQUIRED)	PWHT PROCEDURE	-	REPORT	H	SW/R	-	
95	DIMENSION AND VISUAL INSPECTION OF INTERNAL	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	
96	HYDRO STATIC TEST (AT SHOP)	HYDRO. TEST PROCEDURE	NO LEAK & DEFORM	REPORT	H	H	-	
97	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
98	FINAL DIMENSIONAL & VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	H	-	
99	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
CHEMICAL DOSING AND SAMPLING SYSTEM								
100	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
101	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	
102	WELDING INSPECTION	DRAWING, WPS/PQR	-	REPORT	H	W	-	
103	NON-DESTRUCTIVE EXAMINATION (IF REQUIRED)	NDE PROCEDURE	ASME SEC VIII	REPORT	H	SW	-	
104	DIMENSION & VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	
105	HYDROSTATIC TEST	HYDRO. TEST PROCEDURE	NO LEAKAGE	REPORT	H	H	-	
106	FUNCTIONAL TEST	TEST PROCEDURE	-	REPORT	H	H	-	
107	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	

108	FINAL DIMENSIONAL & VISUAL INSPECTION	DRAWING	-	REPORT	H	H	-	
109	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
EXPANSION JOINT								
110	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
111	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	
112	WELDING INSPECTION	DRAWING, WPS/PQR	-	REPORT	H	W	-	
113	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
114	FINAL DIMENSIONAL & VISUAL INSPECTION	DRAWING	-	REPORT	H	H	-	
115	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
PIPING								
116	MATERIAL RECEIVING INSPECTION	ASTM, DRAWING		MATERIAL CERTIFICATES	H	H	-	
117	FIT-UP & WELDING	WPS/PQR, DRAWING		REPORT	H	SW	-	
118	NDE (MT/ PT, RT) (ONLY SPOOL)	NDE PROCEDURE	-	REPORT		SW	-	
119	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	

120	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
121	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
MANUAL VALVES								
122	MATERIAL RECEIVING INSPECTION	ASTM, DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
123	NDE (IF REQUIRED)	NDE PROCEDURE	-	REPORT	H	SW	-	
124	PRESSURE TEST (HYDRO : SHELL & SEAT, AIR: SEAT)	ASME B 31.1	NO LEAKAGE	REPORT	H	H	-	
125	DIMENSIONAL / VISUAL INSPECTION	DRAWING	-	REPORT	H	SW	-	
126	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
127	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
SIB PIPING & PIPING SUPPORT, SPRING SUPPORT,HANGER AND SPECIAL FmING								
128	MATERIAL RECEIVING INSPECTION	DOCUMENTS / DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
129	QC DOSSIER		-	REPORT	H	R	-	
INSULATION (INCLUDED ACC'Y) & LAGGING SHEET								
130	MATERIAL RECEIVING INSPECTION	ASME, DRAWING	-	MATERIAL CERTIFICATES	H	H	-	

131	QC DOSSIER	MAKER'S STANDARD	-	REPORT	H	R	-	
ELECTRICAL PANEL								
132	WIRING INSPECTION	DRAWING, DOCUMENTS	-	REPORT	H	SW	-	
133	DIMENSIONAL / VISUAL INSPECTION	DRAWING, DOCUMENTS	-	REPORT	H	SW	-	
134	INSULATION RESISTANCE TEST	IEC	-	REPORT	H	W	-	
135	FUNCTION TEST	DRAWING, DOCUMENTS	-	REPORT	H	H	-	
136	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
137	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
ELECTRICAL BULK MATERIAL								
138	MATERIAL RECEIVING INSPECTION	DRAWING, DOCUMENTS	-	MATERIAL CERTIFICATES	H	H	-	
139	DIMENSIONAL / VISUAL INSPECTION	DRAWING, DOCUMENTS	WITHIN TOLERANCE	REPORT	H	SW	-	
140	QUANTITY TEST	DRAWING, DOCUMENTS	-	REPORT	H	SW	-	
141	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
142	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
FIELD INSTRUMENTS AND VALVE								

143	MATERIAL RECEIVING INSPECTION	DRAWING, DOCUMENTS	-	MATERIAL CERTIFICATES	H	H	-	
144	DIMENSIONAL / VISUAL INSPECTION	DRAWING, DOCUMENTS	WITHIN TOLERANCE	REPORT	H	SW	-	
145	FUNCTION TEST	DRAWING, DOCUMENTS	-	REPORT	H	H	-	
146	LEAK TEST	DRAWING, DOCUMENTS	-	REPORT	H	W	-	
147	CALIBRATION	SPECIFICATION	-	REPORT	H	W	-	
148	PAINTING INSPECTION	PAINTING SPEC.	-	REPORT	H	W	-	
149	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING)	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
STRUCTURAL STEEL								
150	MATERIAL RECEIVING-INSPECTION	DRAWING	-	MATERIAL CERTIFICATES	H	H	-	
151	DIMENSIONAL / VISUAL INSPECTION	DRAWING	WITHIN TOLERANCE	REPORT	H	SW	-	
152	VERIFY BOLT HOLE SIZE & LOCATION	DRAWING	-	REPORT	H	SW	-	
153	WELDING INSPECTION	DRAWING	-	REPORT	H	W	-	
154	PAINTING	PAINTING SPEC.	-	REPORT	H	W	-	

155	PRE-SHIPMENT INSPECTION (PACKING, MARKING, QUANTITY, VISUAL CHECK, FINAL DOCUMENT REVIEW AND LOADING	PACKING PROCEDURE	-	PACKING LIST	H	H	-	
	FINAL DOCUMENT REVIEW							
156	DOCUMENT REVIEW			REPORT	H	R	R	
157	RELEASE FOR SHIPMENT			REPORT NOTE	H	R	R	

Abbreviations:

H: Hold Point = Hold on the production till TPI Inspector performs inspection and supervise the required test

W: Witness Point = Manufacture shall notify client and TPI Inspector but there is no hold on the production;

Client can waive this inspection based on his discretion and informs TPI Inspector accordingly.

R: Document Review = Review means Review document, which includes of material test certificates, WPS, PQR, NDT Procedures and etc.

A: Approval

SW: Spot Witness = for items with spot witness manufacture shall notify TPI inspector as fulfilling the monitoring;

For example one random visit for whole UT tests or one or two visits for whole surface preparation works for painting.

MOM: Minute of Meeting

P.O: Purchase Order

For more information review following articles:

<http://www.inspection-for-industry.com/boiler-inspection.html>

<http://www.inspection-for-industry.com/boiler-inspection-and-test-plan.html>

<http://www.inspection-for-industry.com/third-party-inspection-for-water-tube-boiler.html>