INDEX for FORMS
under Indian Boiler Regulations, 1950

FORM I

(Regulation 386 and 487)

National emblem

INDIAN BOILERS ACT, 1923

BOILER INSPECTION DEPARTMENT

BOILER

REGISTRY NUMBER

Memorandum of Inspection
OR
Registration Book

MISCELLANEOUS

District: …….
Owner: ……..
Address of Factory: ……..
_____
_____
Nearest Railway Station ……
Factory is …… miles by ……. from station
Work or Factory: ……..
Working season: : ……..
_____
_____
BOILER registered at : …… on ……
REGISTER BOOK No…… PAGE …….
REGISTRY NUMBER …… verified on: …….
APPROVED WORKING PRESSURE: ……...
BOILER RATING: …….. INSPECTION FEE: ……
REGISTRATION BOOK filed at …… on ……
_____
Remarks on transfers, etc.: _____
_____
_____
_____
_____
_____
_____
_____
_____
_____

PROVISIONAL ORDER AND CERTIFICATE RECORD

Fee	Date of payment	Date of Inspection	Certificate No. and date	Period of Certificate	Working pressure	Boiler Rating	Evaporation	Initials of Inspector

PARTICULARS AND DIMENSIONS

Type of boiler: ……...Leading dimensions ……
Maker ……Intended working pressure:……..
Place and year of make: …….. Maker's number: …….
Description of boiler: ……

_____

_____

_____

Facsimile of }
Makers' stamp }
Position of stamp: …….

MAKER'S CERTIFICATES

{Name: …….
Boiler Maker {
{Manufacture, hydraulic test to ……. lbs. Drawing No ……received
Inspecting {Name: …….
Authority {
{Tests of material, construction, supervision, hydraulic test ……. received …….
{ {Name: ……
{Plates{
{ {Process: ……. received ……
Steel { {Name: ……
Makers{Bars {
{ {Process ……. received ……
{ {Name: : ……
{Rivets{
{ {Process ……. received ……

PARTICULARS AND DIMENSIONS – contd.
MAKER'S CERTIFICATE – contd.

Rolling Mill	{Plates ……	received ……
	{Bars: ……	received ……
	{Rivets: ……	received ……

TEST RESULTS

Plates	{Shell ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{Gusset Stays ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{Girders ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{End and side ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{Fire & Flanged ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{……..……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{……..……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{Bars ..……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{			
	{Screw ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{Bars …..……T ……	to ……... tons	E …… to ……% in ……...in. ……	
Rivet	{			
	{Manufactured ...……T ……	to ……... tons	E …… to ……% in ……...in. ……	
	{Plates ……T ……	to ……... tons	E …… to ……% in ……...in. ……	
Bends	{			
	{Bars ..……T ……	to ……... tons	E …… to ……% in ……...in. ……	
Branding	{Plates ……T ……	to ……... tons	E …… to ……% in ……...in. ……	

Analysis

	Phosphorus	Sulphur
	%	%

PARTICULARS AND DIMENSIONS – contd.

CYLINDRICAL SHELL

	(a) Shell or Fire-box Casing Crown	(b) Barrel or Mud Drum	(c) Steam & Water Drum or Dome
Names of parts……			
Number and material of each……..			
Length between end plates…….			
Length between end plates seam……			
Diameter inside largest belt……			
Thickness of Plates…….			
Number of belts of plating…….			
First or top belt, inside or outside……			
Longitudinal seams			
Position (o'clock)……...			
Kind. L., S.B., D.B., W……...			
Riveting, S., D., T., C., Z., H., M……			
No. of rivets per pitch…….			
Pitch of rivets……..			
Diar. of holes, outer rows……..			
Diar. of holes, inner rows……..			
Distance between rows, outer…….			
Distance between rows, inner…….			
Distance rivet centre to edge……			
Outer butt strap, width x thickness……..			
Inner butt strap, width x thickness……..			
Circumferential seams			
No. of seams (end and inner)……..			
Kind L., S.B., D.B., W.F. & B……..			
Riveting S., D.T., C.Z., H., M……			
No. of rivets per pitch…….			
Pitch of rivets……..			
Diar. of holes……..			
Distance between rows……...			
Distance between rivet centre to edge……			

PARTICULARS AND DIMENSIONS – contd.
SHELL END PLATES AND LONGITUDINAL STAYS

Parts and materials hereunder ……

Plates	{Flat, dished, hemispherical (in …… pieces), not stayed, not flanged
	{Diameter (outside), front …… back, …….. crown …….. Largest circle ……...
	{Radius of curvature front …… back, …….. crown …….. …….. ……..
	{Radius of curvature, corner of flange, shell, ……..…….furnace,…… uptake,……..
	{Plate, thickness, front ……. back, …….crown ……tubeplate F.,……. B., ……..
	{Attacht. to shell, crown, or front, ……
	{Attacht. to shell, back end, ……..
	{Attacht. to uptake or furnace crown or front, …….
	{Attacht. to furnace flue, back end ……..
	{Shell angle ……. riveting, S., d., pitch …….. holes, …….
	{Furnace or uptake riveting, pitch circle, ……. pitch, ……. holes, …….
	{Heml. End sectors, No. ……. riveting S., D., pitch, …… holes, ……..
	{Steam space doubling plate, front, …….. back ……..
	{Steam space stiffener or bulb, front, …… back …….
	{ _____
	{ _____
	{ _____
Stays	{Gusset stay, No.F.E., top, ……bottom, …… B.E., top, ……bottom, ……..
	{Longtl. stays No …….. dia., ……..threads, ……nutted, ……...
	{Longtl. stays pitch, V, …… H ……. circle, …….. washers, …….
	{ _____
	{Diagl. do., ……

PARTICULARS AND DIMENSIONS – contd.
MANHOLES, HAND AND SIGHT HOLES, DOORS AND STAND

Parts and materials hereunder……

Manholes	{No. and position ……..			
	{Framed or plate flanged……...			
	{Boiler opening, length x width ……			
	{Frame opening, length x width ……			
	{Frame inside, outside, raised, pressed …….			
	{Frame solid, welded, cast ……			
	{Frame section on longtl. axis ……..			
	{Door, type and thickness ……			
	{Door, if inside, spigot clearance……..			
	{Bolts, No. dia, threads Nut……..			
	{Bolts, pitch circle…….			
	{Compensation ring, width x thickness…….			
	{Riveting, S., D., T., No., rivets dia holes…….			
Sight Holes	{No. …… dimensions …….positions …….			
	{Compensation rings fitted …… section …….			
	{Doors, type ……... bolts dia., ……... threads ……spigot clearance …….			
	{Cleaning plugs, No. …… dia ……position……...			
Blocks etc.	{Height …… dia (outside), top, …… bottom ……. thickness, ……			
	{Standpipe below stop valve, ……height, …….. dia., (outside) …….. thickness, ……			
	{Flanges ……...			

PARTICULARS AND DIMENSIONS – contd.
FIREBOX CASING

Parts and material hereunder ……

Plates	{Length over all, bottom, ……. width over all, bottom …… {Height foundation seam to inside of crown plate …….. {Crown, arched or flat, riveted to or one piece with sides, dia., …….. {Plate thickness, front, ……sides, ……. saddle, …….. crown, ……. {Radius of corner of flanges, front …… saddle, ……..crown, …….. {Riveting, front to sides, S., D., pitch …… holes, …….. spacing, …… {Riveting, saddle to sides, S., D., pitch …… holes, ……spacing, ……... {Cross stays No. ……..Dia.,……threads, …… nutted, riveted, pitch ……..

RECTANGULAR FIREBOX, COMBUSTION CHAMBER, GIRDERS SMOKE OR WATER TUBES AND SCREW STAYS
Parts and material hereunder, _____

Firebox of Combustion Chamber	{Length inside, bottom …….. top ……Width inside, bottom, …….. top …… {Height, foundation., seam or chamber Bottom to roof …….. Radius of curve, chamber bottom, ……roof side, ……. {Roof, flat, curved, cambered, corrugated, stayed to shell or girders, type, …… {Plate thickness, firehole or chamber back, …… sides, …….. roof, …….. {Plate thickness, bottom …….. tube plate, F …….. B., ……. roof and sides in one, ……. {Attachment to firebox casing at bottom, …… {Attachment to firebox casing at firehole, …… {Foundation Ring section, ……. riveting, pitch …… holes, ……. {Firehole, ring, section, ……. riveting, pitch …… holes, …… {Firehole, opening ……. distance of centre above found. seam, …….. {Side seams, distance between …… riveting, pitch …… holes, ……..

PARTICULARS AND DIMENSIONS – contd.

RECTANGULAR FIREBOX, COMBUSTION CHAMBER, GIRDERS SMOKE OR WATER TUBES AND SCREW STAYS – contd.

Firegrate dimensions, …….. type ……

Girders

{Type …….. Section ……No. …….. lengthwise, crosswise, rest on…….
{Distance apart …….. Bolts, No. .. ……. pitch, …….. dia, ……..threads, ……..
{ nutted, screwed into girder.
{Slings No., …… distance apart …… x …… Section …….x …… pins dia. ……
{Slings, attacht. to Shell ……

Tubes

{No. plain, …… Stay …….. length between tube plates …….. make ……
{Plain, dia. (out) …… thickness, ……. F.E., expd., bead, frld. S.E., Expnd., bead, or ……...
{Stay dia. (out) …….. thickness, ……. F.E., expd., bead, nutted, S.E., Expnd., nutted, ……
{Stay dia. (out), over threads, F.E., …… S.E., ……. Threads …… nuts ……..
{Pitch of plain tubes, V…….. H …… D …… C.Z. straight curved. Lie, ……
{Pitch of stay tubes, V., ……× ……×……×…… Marginal pitch, …….

Screw Stays

{Tube, plate No. of rows, V ……H.,…… Pitch, V., ……H., ……
{F. hole or back do., V …… H., …….. Pitch, V., …….. H., ……...
{Sides, do., V ……H., ……... Pitch, V., ……..H., ……
{Roof, do., L., wise …… C. wise……Pitch, L., ……. C., ……..
{Bottom, do., L., wise ……. C. wise ……... Pitch, L., ……..C., ……
{Ordinary stays, dia., …….. threads, ……nuts ……. riveted, bodies turned to ……. in.
{Marginal, do., …… threads, …….. nuts ……. riveted, bodies turned to …… in.
{Roof. do., ……threads, … …….. nuts ……. riveted, bodies turned to …… in.

PARTICULARS AND DIMENSIONS – contd.
CIRCULAR FURNACE, CROWN AND UPTAKE

Parts and material hereunder ……

{No. of furnaces, ……..…. Type ……
{No. of rings in each ……Longitudinal. Seams …….

Horizontal and Vertical Furnaces

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Length between Centre	R															
	L															
Inside Diameter	R															
	L															
Plate Thickness	R															
	L															
Position of cross tubes	R															
	L															

PARTICULARS AND DIMENSIONS – contd.
CIRCULAR FURNACE, CROWN AND UPTAKE – contd.

Horizontal and Vertical Furnaces	{Flanges, type, …….. riveting, pitch, …….. holes, ……
	{Caulking ring, ……. Radius of corner …….Flange, width ……..
	{Crosstubes, No. each furnace, …… longitudinal seam, …….. riveted, welded to Flue.
	{ Do. dia (outside), top …….. bottom …… Thickness ……..
	{Attacht. to shell at bottom …….
	{ Do. do. do. firehole, …….
	{Foundn. ring section ……. riveting pitch, ……. holes ……..
	{Firehole ring section ……. riveting pitch, …… holes ……..
	{Firehole opening …….. x …… distance of centre above foundn. seam ……
	{Screw Stays, No. of rows …… Pitch V., …….. H …… nearest row to foundn. seam …….
	{Screw Stays, No. of dia. …….. threads …… nuts, …….. riveted bodies turned to ……..……in.

Firegrate dimensions …… type ……

Crown	{Flat, dished hemispherical, not stayed, not flanged, Dia. (outside) ……
	{Radius of curvature …….. corner of flange, furnace ……. uptake…… largest circle ……...
	{Plate thickness, crown …….. ogee ring …… Boltstay pitch circle ……
	{Attachment. to furnace or …….. to uptake ……
	{Uptake riveting, pitch circle …….. pitch …… holes …….

Uptake	{Cylindrical, tapered, flanged …… Longitudinal seam ……. Length between seams ……
	{Thickness ……... Dia. (outside), top …… bottom ……Liner not fitted ……

PARTICULARS AND DIMENSIONS – contd.
WATER TUBES, HEADERS, BOXES AND SUPERHEATER

Parts and material hereunder ……

Tube

{Main tubes, No. …… make ……..…..
{Dia. (outside) ……. thickness …… Length between headers or plates …….
{Pitch V ……. H …… D …… C. Z. Straight, curved, Lie, …….
{Ends expanded, beaded, belled to …… in. in …….
{Downtake tubes, No. ……. dia. (outside) …….. thickness …… Length (exposed) ……..

Headers

{Headers, No. …… section (outside) ……×…… thickness …… solid, welded.
{Staggered or straight, Lie …….. No. tubes in each ……..
{Caps round, oval, square, inside, outside, Bolts, Dia. ……. threads …… nuts ……...

Mud-boxes

{Mudbox, length, …….. section (outside) ……..…× ……. thickness ……... solid welded.
{Cross boxes No. ……... section (outside) ….…… × ….…… thickness …… solid welded.

Superheater

{Tubes, No. ……. dia. (outside) …… thickness ……. make …….
{Straight, curved, Lie …… Position…….
{Ends expanded, beaded, belled to …… in. in ……....
{Description of superheating system ……
{_____
{_____
{_____
{Firegrate dimension ……Type ……...

DESCRIPTION OF INTEGRAL ECONOMISERS

PARTICULARS AND DIMENSIONS – contd.

MOUNTINGS AND FITTINGS

		Number	Diameter	Type	Material	Bolted to
	{Safety					
	{Do					
	{M. Stop					
Valves	{A. Do					
etc.	{Feed					
Chests	{Blow down					
	{Scum					
	{Injector					

{Water gauges, No…… type ……. Test cocks No. ……

{Water gauges, top of lower nut is …… inches above ……

{Test cocks, bottom cock is …… inches above ……

{Pressure gauge, Type …….. dia. …….. in range …… lbs.

{Pressure gauge, Maker …… No. …….. red line at ……. lbs.

Miscellaneous {Tester attachment type ……. screw ……. position ……...

Fittings {Hose attachment type ……screw …… position ……...

{Fusible plug, type ……. position ……..

{Blow down elbow, material …… waste pipe, separate, connected to ……

{Centre of feed inlet is …….. inches above …….. on right, left, side ……...

{Feed apparatus ……

Additional fittings……

CALCULATIONS

SHELL, BARREL, S. & W. DRUM, F.C. CROWN, DOME, M. DRUM RIVETED JOINTS

Parts	Joint Fig. No.	Longitudinal	Joint Fig. No.	Circumferential
(A) …….		P…….D ……...T.… N C S_1		P……. D……...T N. C. S_1
(B) …….				
(C) …….				
	Actual	Rule	Actual	Rule
Max. Pitch …….				
Outer Rows ……...				
Inner Rows ……				
Edges …….				
Wide Strap …….				
Narrow Strap …….				

Plate %…… $\frac{100\ (P - D)}{P} = \quad \%$ $\frac{100\ (P - D)}{P} = \quad \%$

Rivet %…… $\frac{100 \times A \times N \times C \times S_1}{P \times T \times S} = \quad \%$ $\frac{100 \times A \times N \times C \times S_1}{P \times T \times S} = \quad \%$

Combined %…… $\frac{100\ (P - 2D)}{P} + \frac{100 \times A \times C \times S}{P \times T \times S}$ %

Working Pressure …… t……..S…...J…...C…...D…..W.P. = $\frac{(t - 2) \times S \times J}{C \times D} = \quad$ lbs. Least Pressure …… lbs.

CALCULATIONS –contd.

FLAT END PLATES AND GUSSET STAYS

Plate stiffness

Dimensions		Front	Back	FRONT END
Thickness	{ t…….			$(t-1)^2$
	{	_____	_____	W.P. = -------- = lbs.
				D^2
	{t_1……	_____	_____	
	{I ……	_____	_____	
	{			Around Manhole
	{I – II ……..	_____	_____	$[(t-1)^2 + (t_1-1)^2]$
	{			W.P.= ---------- = lbs.
	{II – III ……	_____	_____	D^2
	{			
	{III ……..	_____	_____	
	{			
	{IV ……..	_____	_____	BACK END
	{			
	{IV – V ……	_____	_____	$(T-1)^2$
	{			W.P. = ---------- = lbs.
	{Over Furnaces ……...	_____	_____	D^2
	{			
	{Below Do ……..	_____	_____	
	{			
	{Manhole …….			

CALCULATIONS – contd.

FLAT END PLATES AND GUSSET STAYS – contd.

AREAS (A) SUPPORTED BY GUSSET STAYS

Dimensions		Front	Back	FRONT END Gussets	Areas
	{Mid.……			I. =	Sq. in.
	{I …….			II. =	"
Length	{II ……			III. =	"
of Lines	{III ……..			IV =	"
	{IV ……..			V =	"
	{V or Mid.				
				BACK END	
	{I – I ……			I =	"
Distance	{I – II ……..			II =	"
between	{II – III ……			III =	"
Lines	{III – Apex. …….			IV =	"
	{IV – Apex. …….			V =	"
	{IV – V or Mid. ……				

PLATE MARGINS

W. P……

$$\frac{3.7(t-1)}{\sqrt{\text{W. P.}}} = \text{ins.} \qquad \frac{3.47\,(t-1)}{\sqrt{\text{W. P.}}} = \text{ins.}$$

LEAST PRESSURE lbs.

CALCULATIONS – contd.
FLAT END PLATES AND GUSSET STAYS – contd.
GUSSET STAYS PARTICULARS

Gusset Plate, thickness …….. tons …….. angles ……... x …….. x …….

Number and Diameter of Rivets and Section & of Stays

Gusset		N_1	N_2	N_3	N_4	D_1	D_2	D_3	D_4	G	G_1	Toe Rivets
I.	F											
	B											
II.	F											
	B											
III.	F											
	B											
IV.	F											
	B											
V.	F											
	B											

CALCULATIONS – contd.
GUSSET STAY CALCULATIONS

		I	II	III	IV	V	
Coefficient	$\{N_1 \times A_1 \ldots = \frac{F}{B}$						
	$\{N_2 \times A_2 \times 1.875 = \frac{F}{B}$						
	$\{N_3 \times A_3 \times 1.875 = \frac{F}{B}$						
	$\{N_4 \times A_4 \ldots\ldots = \frac{F}{B}$						
	$\{(G-N_2D_2)(t-2)\ .037 = \frac{F}{B}$						
Working Pressur	$\{(G_1-D_2)(t-2)\ .037 = \frac{F}{B}$						
	$\{\frac{8500 \times C}{A} \ldots\ldots = \frac{F}{B}$						Least Pressure …….…… lbs.

CALCULATIONS – contd.

Least Pressure

CALCULATIONS – contd.

SAFETY VALVES

(A) (B) (C)

No. valves each chest…… _____
Type …… _____
Diameter of valve…… _____
Diameter of neck……. _____
Diameter of outlet…… _____

Weights { Plates _____
{Casing _____
{Valve _____

LEVER AND WEIGHT VALVES

High Steam and Low Water Type.

( ) ( )

Weights {B…… _____
{L…… _____
{V…… _____

Distances {B to F…… _____
{G to F…… _____
{V to F…… _____

Balanced Lever ( )

$$\frac{[\text{W.P. } (A - a) - V] \text{ V to F}}{B} = \text{ins.}$$

Small Valve ( )
W.P. x a ( ) = lbs.

Unbalanced Lever ( )

$$\frac{[\text{W.P. } (A - a) - V] \text{ V to F} - (\text{G to F}) \text{ L}}{B} = \text{ins.}$$

Ordinary Type Unbalanced (Lever) ( )

$$\frac{[\text{W.P. } (A - V)] \text{ V to F} - (\text{G to F}) \text{ L}}{B} = \text{ins.}$$

DEAD WEIGHT VALVE ( ) =
W.P. x A lbs.

CALCULATIONS – contd.

SAFETY VALVES – contd.

SPRING LOADED VALVE

Range of compression ……. inches. Load compression …… inches.

L = (A x W.P.) ; D = ; C ; K = ; d = "
B = ; H = ; W.P. ; A = ;

Round Section	Square Section	Rectangular Section
$W.P. = \frac{10000n \times d^2}{DACK}$	$W.P. = \frac{33333 \times d^2}{DACK}$	$W.P. = \frac{160000\ B^2 \times H^2}{DACK\ (3B + 1.8H)}$

REQUISITE AREA OF SAFETY VALVES

For Saturated steam: $A = \frac{E}{C.P.}$

For Superheaded steam: $As = A \sqrt{1 + \frac{1.5T}{1000}}$

E = ; C = ; P = ; A =
AS = T = ; A =

NOTES ON WORKING OF BOILER

Boiler is used for ……...
Constant, intermittent or seasonal work ……..
Is boiler relieved by square boiler? ……..
How long worked between cleanings? …….
Most suitable time for inspection …….
Pump available for hydraulically testing boiler? ……..
Feed water used, town well, surface or jet condenser ……..
Nature of water …….

Fuel used ……. Are printed instructions kept near boiler? ……..
Period between cleanings approved by Inspector …….

CALCULATIONS – contd.
HEATING SURFACE

Total Heating Surface …… sq. ft.
Boiler Rating ……..……

Calculations made by …….. on …… submitted on ……..
Calculations checked by …… on ……..……..……
Least Pressure, that for ……..……..……..… lbs.
Approved working pressure……..……..…… lbs.
Chief Inspector's remarks and signature ……..……..……..……

HYDRAULIC TEST REGISTRATION

Inspector …….. Date of test …… Test pressure …… lbs.
Duration of test …….. mins. Boiler pressure, gauge No. ……..use at test …….
Boiler pressure gauge compared with ……... on …… found …….
Position of boiler at test ……
Brickwork …… Lagging …….
Condition of boiler under test ……
Condition of boiler mountings under test ……

RIGHT HAND

	Ring	Nos	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Fur-nace Gau-gings	Before Test	V															
		H															
	During Test	V															
		H															
	After Test	V															
		H															
	Bulging	V															
		H															
	Permt. Set	V															
		H															

HYDRAULIC TEST (REGISTRATION) – contd.

LEFT HAND

Furnace Gaugings

	Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Before Test…	V															
	H															
During Test	V															
	H															
After Test…...	V															
	H															
Bulging……..	V															
	H															
Permt. Set……	V															
	H															

FRONT END BACK END Sketch position of gauge points

End Plate Gaugings

Gauge Points	A	B	C	D	A	B	C	D
Before Test…..								
During Test….								
After Test……								
Bulging……								
Permt. Set……								

STEAM TEST (REGISTRATION)

Inspector _____ Date of test _____
Approved working pressure _____ lbs._____ Test pressure _____ lbs. _____
Inspector's pressure gauge _____ Boiler pressure gauge No._____
Boiler connections _____ Condition of fire _____
Fuel used _____ Draught _____
Safety Valves lifted at (A) _____ lbs. (B) _____ lbs. (C) _____ lbs.

	Beginning	5 mins.	10 mins.	14 mins.	Difference
Timing of test …..……					
Height of water in glass …….					
Pressure by Inspector's gauge ……					
Pressure by Boiler gauge ……					

Accumulation of pressure, 100(-) = % _____
Do safety valves efficiently relieve boiler? _____
Condition of boiler under steam _____
Condition of mountings under steam _____
Loading of valves at blowing pressure (A) _____
Loading of valves at blowing pressure (B) _____
Loading of valves at blowing pressure (C) _____
Thickness of washers or ferrules _____
_____
Feed pump or injector worked _____
Water gauges tested _____
Boiler Attendant _____
Limit of load on safety valves to be entered in Certificate _____
_____
_____
_____

INSPECTOR'S NOTES

PARTICULARS OF BOILER ATTENDANTS

Grade	Name	No. and year of Certificate	Date of Employment

FORM II

INSPECTING AUTHORITIES CERTIFICATE OF INSPECTION DURING CONSTRUCTION
[REGULATION 4 (c)(1)]
DESIGNATION OF INSPECTING AUTHORITY

We hereby certify that the _____ type, boilers; length _____ feet _____ inches; diameter _____ feet _____ inches; working pressure _____ lbs. built by Messrs _____ at _____ under shop Number _____ was constructed under our supervision and inspected at various stages of construction by the Inspecting Officer and that the construction and workmanship were satisfactory and in accordance with the Standard Conditions for the design and construction of land boilers under the Indian Boilers Act, 1923.

The boiler is stamped on the front end plate with our stamp as shown hereunder:-

_____

Maker's Name _____ Year of Make _____
Works number _____
Tested to _____ lbs. _____ on _____
W. P._____ lbs.

Inspecting Officer's or Inspecting Authority's Official Stamp.

*The boiler on completion was
---------- subjected to a water pressure test of ..... lbs. per
The drum and headers were
square inch in the presence of the Inspecting Officer on _____ 19 _____ and satisfactorily withstood the test.

*Samples of materials used in the constructions of the boiler were tested in the presence of the Inspecting Officer and found to comply with the requirements.

All welded seams were subjected to physical tests and radiographic examination wherever applicable and found satisfactory.

NOTE.- Strike off this paragraph where no such test has been carried out and the certificate in Form IV by a Well-known Maker is intended to be furnished.

We have satisfied ourselves that the construction and dimensions of the boiler are as shown in the Maker's Drawing No._____ signed by us, and that the particulars entered in the Maker's certificate of manufacture in Form III countersigned by us are correct to the best of our knowledge and belief.

Signature of Inspecting Authority

Dated at _____ this _____ day of _____19 .

_____
*Strike out what is not applicable.

FORM II-A

INSPECTING AUTHROTIES CERTIFICATE OF INSPECTION DURING CONSTRUCTION IN RESPECT OF A BOILER MADE TO FOREIGN CODE FOR EXPORT.

(Regulation 3 A.)

Designation of Inspecting Authority

We hereby certify that the _____ type, boilers; length, _____ diameter, _____ working pressure _____ built by Messrs. _____ at _____ under shop Number _____ was constructed under our supervision and inspected at various stages of construction by the Inspecting Officer and that the design, construction and workmanship were satisfactory and in every respect in accordance with _____ Code/Specification.

The boiler is stamped as under:-

The boiler on completion was tested to _____ in the presence of the Inspecting Officer on _____ and it satisfactorily withstood the test. Details of tests and inspections are furnished with this certificate.

We have satisfied ourselves that the design, construction and dimensions of the boiler are as shown in the Maker's Drawing No._____ approved and signed by us, and that the particulars entered in the Maker's certificate of manufacture are correct to the best of our knowledge and belief. Maker's certificate signed by them and countersigned by us, as required by the _____ Code/Specification, is enclosed.

Signature of Inspecting Authority

FORM II-B

INSPECTING AUTHORITIES CERTIFICATE OF INSPECTION DURING CONSTRUCTION OF BOILERS FOR WHICH VARIATIONS FROM STANDARD CONDITIONS HAVE BEEN PERMITTED.

(Regulation 4 (c) (i) Note)

DESIGNATION OF INSPECTING AUTHORITY

We hereby certify that the _____ type boilers; length _____ diameter _____ working pressure _____ built by Messrs _____ at _____ under Shop Number _____ was constructed under our supervision and inspected at various stages of construction by the Inspecting Officer, and that the design, construction and workmanship were satisfactory and in accordance with the variations from the standard conditions laid down in the Indian Boiler Regulations, 1950, for material, design and construction features have been permitted by the Board or Inspecting Authority under the Indian Boilers Act, 1923.

The Boiler is stamped on the front end plate with our stamp as shown hereunder:-

Maker's Name _____ Year of Make _____
Works Number _____
Tested to _____ on _____
W. P. _____

Inspecting Officer's or Inspecting Authority's official stamp.

*The boiler on completion was
The drum and header were subjected to a water pressure test of _____ in the presence of the Inspecting Officer on _____ 19 _____ and satisfactorily withstood the test.

Samples of materials used in the construction of the boiler were tested in the presence of the Inspecting Officer and found to comply with requirements. All welded seams were subjected to physical tests and radiographic examination wherever applicable and found satisfactory.

Note:- Strike off this paragraph where no such tests have been carried out and the certificate in Form IV by a well-known maker is intended to be furnished.

We have satisfied ourselves that the constructions and dimensions of the boiler are as shown in the Maker's Drawing No._____ signed by us and that the particulars entered in the Maker's certificate of manufacture in Form III countersigned by us, are correct to the best of our knowledge and belief. Particulars of variations from the standard conditions laid down in the said regulations as permitted by the Board or Inspecting Authority are enclosed.

Signature of Inspecting Authority

Dated at _____ this _____ day of _____19___.

*Strike out what is not applicable.

FORM III

WORKS ADDRESS

Constructor's Certificate of Manufacture and Test

[REGULATION 4 (c)(III)]

---

1. Description ……..

Constructor's Name and address _____
Manufactured for/Stock purposes _____
_____ Contract No._____
Type of boiler _____ Length overall _____
Diameter inside Largest belt _____
Design pressure _____ lbs./sq. in.
Intended working pressure _____ lbs./sq. in.
Shop Number of boiler _____
Year of Manufacture _____
Total heating surface _____ sq. ft.
Final Temperature of steam (Design) _____of
Grate area _____ sq. ft.
Brief description of boiler _____
_____
Evaporation capacity_____
(for calculation of relieving capacity of safety valves)

---

2. Parts Manufactured at the contractor's works Name of part(s) _____
Description _____
_____
Leading dimensions _____
Manufactured by _____
Identification marks _____
Part(s) manufactured inspected at all stages of construction
by _____
_____ (Inspecting Authority).
Certificates furnished (Constructor's, Steel Maker's and Inspecting Authority's etc.) _____
Part(s) hydraulically tested and internally Inspected after test by
_____

---

3. Parts manufactured outside the constructor's works.

Name of part(s) _____
Description _____
Leading dimensions _____
Manufactured by _____
Identification marks _____
Part(s) manufactured, inspected at all stages of construction
by _____
_____ (Inspecting Authority).
Certificates furnished (Constructor's Steel Maker's and Inspecting Authority's etc.) _____
Part(s) hydraulically tested and internally Inspected after test by
_____.

NOTE.- Similar information is to be furnished for each part manufactured outside the Constructor's Works.

4. Construction:

(a) Riveted/composite construction shells/drums/Miniature Boilers: The construction is in accordance with Chapter III/XIV of the Indian Boiler Regulations.

Number of longitudinal seams in shell/drum in each belt_____
Number of longitudinal seams in furnace in each ring _____
Number of circumferential seams in shell/drum _____
(including end seams) _____
Number of circumferential seams in the furnace _____
Details of repairs, if any, carried out in welded seams during construction _____
Details of heat treatment _____

The longitudinal seams are welded/riveted and have _____ rows of rivets in inside strap and _____ rows of rivets in outside strap.

Rivet holes are _____ diameter and number _____ per pitch of _____ .

Butt straps cut from plates and bent to required curvature in _____.
The circumferential seams joining rings of shell are _____ jointed and single/double riveted/welded.

Rivet holes are _____ diameter and number _____ per pitch of _____.

The shell end seams are _____ jointed and single/double riveted/welded.

Rivet holes are _____ diameter and number _____ per pitch of _____

Details of seams as in drawing No._____.

All welded seams are subjected to Radiographic examination to the satisfaction of the Inspecting Authority, where required.

(b) Shell type boilers of welded construction – The construction is in accordance with Chapter XII of the Indian Boiler Regulations.

Number of longitudinal seams in shell in each belt _____.
Number of longitudinal seams in furnace _____.
Number of circumferential seams in shell _____.
Number of circumferential seams in furnace _____.

Details of repairs, if any, carried out to welded seams during construction _____.

Details of heat treatment _____.

All welded seams were subjected to radiographic examination to the satisfaction of the Inspecting Authority, where required.

(c) Fusion welded Electrode Boilers – The construction is in accordance with Chapter X of the Indian Boiler Regulations, 1950.

Number of longitudinal seams in shell _____.

Number of circumferential seams (including end seams) _____.

Details of repairs, if any carried out to welded seams during construction _____.

Details of heat treatment _____.

All welded seams were subjected to radiographic examination to the satisfaction of the Inspecting Authority, where required.

(d) Fusion welded and seamless forged drums of water tube boilers - The construction is in accordance with Chapter V of the Indian Boiler Regulations, 1950.

Number of longitudinal seams in each ring _____.
Number of circumferential seams _____.
Details of repairs, if any, carried out to seams during construction _____.
Details of heat treatment _____.

All welded seams were subjected to radiographic examination to the satisfaction of the Inspecting Authority.

(e) Furnace seams – The longitudinal seams are welded/riveted. The cross seams joining rings are of _____ type _____ riveted/welded.

Boiler parts and fittings		Material	Smelter	Make	Inspecting Officer	Remarks
5. Material Manufacturer	Plates…… Plates…… Rivet bars…… Stay bars…… Angles…… Bolts…… Tubes…… Tubes…… Tubes…… Girders…… Boxes…… Headers…… Headers…… Manhole frames…… Manhole doors…… Manhole…… Sighthole doors…… Stand blocks…… Stand pipes…… Stop valve chests…… Safety valve chests…… Feed valve chests…… Blow down valve…… Blow down elbow pipe….. Water gauge mountings…..					

NOTE.- Under "material" enter against appropriate items: "Steel Simens Martin Open Hearth acid (or basic) process", "Wrought Iron, Brand……", "Cast Steel Process" ….. etc. etc. and under "Remarks" a brief explanation of process of manufacture where necessary e.g., "Solid drawn Lap welded", "Solid Pressed", tested by Makers…… lbs. per sq. inch etc.

Part of Boiler	Thickness of plates in 32nd or diameter in inches	Tensile strength limits to tons	Elongation limits to %	Gauge length inches	Brand & No. of plate
1 2	3	4	5	6	7
6. Thickness of Plates etc., and tensile test, Limit Cylindrical Shell plates Shell…….……. Butt /straps…….. Steam & Water drums…… Wrapper plate (1)……... Tube plate (1)……. Wrapper plate (2)……. Tube plate (2)……. Wrapper plate (3)……... Tube plate (3)…….					
Cylindrical shell Plates Barrel…….……. Fire Box casing crown…... Dome…….. Mud or bottom drum (1).... Mud or bottom drum (2)… Mud or bottom drum (3)…					
Shell end plate and drum Heads Front end shell…….. Front end shell steam and water drum (1)……..…... Front end shell steam and water drum (2)…….. Front end shell steam and water drum (3)…….. Front end shell Mud Drum (1)…… Front end shell Mud Drum (2)…… Front end shell Mud Drum (3)…….. Back end shell……. Back end shell steam and water drum (1)……. Back end shell steam and water drum (2)……. Back end shell steam and water drum (3)…… Back end shell Mud drum (1)…….. Back end shell Mud drum (2)……... Back end shell Mud drum (3)……... Shell crown…….. Dome end……. Saddle…….. Fire box casing sides……... Doubling plate Front……. Doubling plate back……					

1	2	3	4	5	6	7
Flanged and fire exposed Plates	Furnace circular (Plain)…... Furnace circular……. Firnace circular (Corrugated)…… Fire box crown……... Fire box side……... Fire box front…….. Fire box tube……... Uptake……. Smoke box tube…….. Com. Chbr. wrapper……... Com. Chbr. back…….					

THICKNESS OF PLATES ETC. AND TENSILE TEST LIMITS

1	2	3	4	5	6	7
Tubes	Cross tubes…… Smoke tubes (Plain)……. Smoke tubes (Stay)…….. Water tubes (Bottom or Front bank)…… Water tubes (top or rear Bank)…… Balancer tubes (Steam)…. Balancer tubes (Water)…. Superheater tubes……. Superheater tubes……. Superheater tubes……. Water wall tubes……... Water wall tubes…… Integral Economiser tubes.					
Headers and cross Boxes.	Sectional headers……... Water wall headers (1)….. Water wall headers (2)….. Water wall headers (3)….. Water wall headers (4)….. Water wall headers (5)….. Water wall headers (6)….. Integral Economiser headers (1)…… Integral Economiser headers (2) Superheater headers (1)…. Superheater headers (2)…. Superheater headers (3)…. Superheater headers (4)…. Superheater headers (5)…. Superheater headers (6)… Mud boxes (1)…….. Mud boxes (2)…….. Mud boxes (3)…….. Mud boxes (4)……..					

Stays and Bolts	Gusset stay plates……. Longitudinal……. Cross…….. Screw…… Roof…….. Firebox roof slings…… Firebox roof pins…….. Girder bolts……... Shell angle bolts…….... Uptake angle bolts…… Manhole bolts……... Sighthole bolts…….					
Miscellaneous	Firebox girders…….. End plate stiffeners…... Shell angle…… Furnace angle…… Uptake angle……. Gusset angle…….. Manhole Compensation ring……... Manhole frame…….. Manhole cover……. Sighthole compensation ring……... Sighthole doors……. Stand blocks…….. Stand pipes……					

7. Details of Drums

No.	Nomencla-ture	Nominal dia.	Length	Shell Plate		Tube Plate		Head			Manhole No. and size
				Thick-ness in 32^{nds} of inch.	Inside radius inches	Thick-ness in 32^{nds} of inch.	Inside radius in inches	Thick-ness in 32^{nds} of inch.	** Type	Radius of dish in inches	
1	2	3	4	5	6	7	8	9	10	11	12

**Indicate (1) Flat (2) Dished (3) Ellipsoidal (4) Hemispherical.

8. Headers and Boxes

No.	Size and shape	Thick-ness in 32^{nds} inch	Head or end		Hydrostatic test lbs./sq. in.
			Shape	Thickness in 32^{nds} in.	
Water Wall Headers 1 2 3 4 5 6					
Integral Economiser headers 1 2					
Superheaters Headers 1 2 3 4 5 6					
Mud boxes 1 2 3 4					

9. Tubes

Sl. No.	Nomenclature	Outside diameter in inches	Thickness in 100^{ths} of inch.
1.	Cross tubes…….		
2.	Smoke tubes (Plain)……		
3.	Smoke tubes (Stay)…….		
4.	Water tubes (bottom or front bank)……		
5.	Water tubes (rear or top bank)……		
6.	Balancer tubes (Steam)……...		
7.	Balancer tubes (Water)……...		
8.	Superheater tubes……		
9.	Superheater tubes……		
10.	Water wall tubes…….		
11.	Integral economiser tubes……..		

10. Mountings

No.	Nomenclature	Material	Type	No.	Size
1.	Main stop valve……				
2.	Auxiliary stop valves……..				
3.	Safety valves (a)……..				
	(b)……..				
	(c)……..				
4.	Blow down valve(s)……				
5.	Feed check valves……				

11. Boilers:

Details of safety valves and test results:

Manufacturer……

Identification marks of valves…….

Maker's No……..

Type……

Lift (mm)…… Drawing Nos……...

Valves details:-

Material……

Valve Seat……

Flat/Bevel…….

Diameter of valve seating…….

Valve Body:-

Material……...

Opening at neck……..

Opening at outlet…….

Springs:-

Material……

Process of manufacture……

Chemical composition…….

Dimensions:

Outside diameter of coil……..

Section of wire……

Number of coils……..

Free length of coils……

Test results:-

Place of test…….. date……

Closing down pressure……

Remarks:-

Does the valve chatter?……

Does the valve seat leak?…….

Blow off pressure…….

Type of valve and extract of test results……..

Type of valve……

Place of test…….. date ……

Constant 'C' by test results……..

Capacity of the valve for the intended blow off pressure……..

Signature of Maker's representative

Inspecting Authority witnessing tests.

12. Certified that the particulars entered herein in manuscript by us are correct and that parts and fittings in sections 2 to 11, against the names of which entries are made, have been used in the construction and fittings of the boiler.

The particulars shown against the various parts used are in accordance with the enclosed certificates from the respective Makers.

The design of the boiler is that as shown in Drawing Nos……..

The boiler has been designed and constructed to comply with the Regulations under the Indian Boilers Act, 1923, for a working pressure of _____lbs.
per square inch at our Works above-named and satisfactorily withstood a water test of _____ lbs. per square inch on the _____ day of _____, 19___ in the presence of our responsible representative whose signature is appended hereunder.

MAKER
(Signature of Maker)
or
Secretary of Firm.

Name and Signature of Engineer who witnessed test.

Designation

Dated at _____ the _____ day of _____ 19___.

Official Seal

Name and Signature of
Inspecting Authorities.

FORM III-A

Certificate of Manufacture and test
[REGULATION 4(e)]

Name of part……
Maker's name and address……..
Design pressure……
Design temperature……..
Material
Process of manufacture……
Fully killed/rimmed…….
Chemical composition…….
Pipes
Main dimensions……..
Tolerances……
Mode of manufacture……..
Identification marks…….
Drawing numbers……
Bend test on pipe…….
Bend test on weld……
Flattening test……..
Tensile strength……
Mode of attachment of flanges……
Flange particulars……
Size of branches……..
Mode of attachment of branches…….
Heat treatment……..
Final hydraulic test……..

NOTE.- In addition, the following information in respect of the material shall be furnished in a tabular form in conformity with the requirements of regulation 4(c)(vi) or the note thereto, as the case may be. The information may be given from the established test data or if the material is of standard quality an extract from the standard may be furnished instead.

Metal temperature	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
E_t															
S_c															
S_r															

Tensile strength at 20°C.

Where
E_t = Yield point at temperature t (0.2% proof stress)
**S_c = Average stress to produce an elongation of 1% (creep) in 100,000 hours at various working metal temperatures.

**S_r = Average and lowest stress to produce rupture in 100,000 hours at the various working metal temperatures.

Temperature range in the table may extend upto the limit of applicability of the material.

The value of S_c and S_r need be furnished only in respect of Pipes/Tubes intended to be used for working metal temperature above 454°C (850°F).

Certified that the particulars entered herein are correct.

The particulars of fabricated component are shown in drawing No. .....

The part has been designed and constructed to comply with the Indian Boiler Regulations for a working pressure of _____ and temperature _____ and satisfactorily withstood a water test of _____
on the _____ day of _____ 19___, in the presence of our responsible representative whose signature is appended hereunder.

Maker's Representative
(Name and signature)

Maker _____

We have satisfied ourselves that the pipes have been constructed in accordance with chapter VIII. The tests conducted on the samples taken from the finished pipes have been witnessed by us and the particulars entered herein are correct.

Place _____
Date _____

Name and signature of
Inspecting Authority.

NOTE (1).- This form is intended for the use of both pipe manufacturers and pipe fabricators. Only such of the columns or paragraphs that are applicable, or information that can be obtained and furnished from other certificates, need be filled or entered in this form.

NOTE (2).- In the case of fabrications made from steel pipes obtained from elsewhere, particulars in regard to the "material" and "pipes" shall be taken from similar forms of certificates obtained in respect of pipes and noted in the appropriate columns or paragraphs.

In the case of pipes made from steel, made and tested by well known Steel Makers in India or other countries, particulars regarding the 'material' as certified by them (in any form) shall be noted in the appropriate columns or paragraphs in this certificate.

FORM III-A(i)

(Certificate of manufacture and test of steampipes for which variation has been permitted).
Regulation 4 (h)

Name of part……
Maker's name and address……..
…….
Intended working pressure……...
Recommended maximum temperature……
Material
Process of manufacture……
Fully killed/rimmed…….
Chemical composition…….
Pipes
Main dimensions…….
Tolerances……
Mode of manufacture……..
Identification marks……
Drawings numbers……..
Bend test on pipe…….
Bend test on weld……
Flattening test……..
Tensile strength……
Mode of attachment of flanges……
Flange particulars……
Size of branches…….
Mode of attachment of branches……
Heat treatment……
Final hydraulic test……

Note.- In addition, the following information in respect of the materials shall be furnished in a tabular form as indicated. The information may be given from the establishment test data or if the material is of standard quality an extract from the standards may be furnished instead.

Metal temperature	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
E_t															
S_c															
S_r															

Tensile strength at 20°C.

E_t = Yield point at temperature t (0.2% proof stress)

S_c = Average stress to produce an elongation of 1% (Creep) in 100,000 hours at the various working metal temperatures.

S_r = Average and lowest stress to produce rupture in 100,000 hours at various working metal temperatures.

Temperatures range in the table may extend upto the limit of applicability of the material.

The values of S_c and S_r need be furnished only in respect of pipes/tubes intended to be used for working metal temperature above 454°C.

Certified that the particulars entered herein are correct.

The particulars of fabricated components are shown in drawing No. .....

The part has been designed and constructed to comply with the variations from the standard conditions laid down in the Indian Boiler Regulations, 1950, for materials, design and construction features which have been permitted by the Board or the Inspecting Authority under the Indian Boilers Act, 1923 and satisfactorily withstood a water test of _____ on the _____ day of _____, 19__ in the presence of our responsible representative whose signature is appended hereunder.

Maker's Representative
(Name and signature) Maker _____

We have satisfied ourselves that the pipes have been constructed in accordance with the variations, from the standard conditions laid down in the Indian Boiler Regulations, 1950, for material, design and construction permitted by the Board. The tests conducted on the sample taken from the finished pipes have been witnessed by us and the particulars entered herein are correct.

Place_____ Name and Signature of
Date _____ Inspecting Authority

Note (1) This form is intended for the use of both pipe manufacturers and pipe fabricators. Only such of the columns or paragraphs that are applicable, or information that can be obtained and furnished from other certificates, need be filled or entered in this form.

Note (2) In the case of fabrications made from steel pipes obtained from elsewhere, particulars in regard to the "material" and "pipe" shall be taken from similar forms of certificates obtained in respect of pipes and noted in the appropriate columns of paragraphs.

In the case of pipes made from steel, made and tested by Well known steel Makers in India or other countries particulars regarding the 'material' as certified by them (in any form) shall be noted in the appropriate columns or paragraphs in this certificate.

FORM III-B

(Certificate of Manufacture and Test)
[REGULATION 4(f)]

Maker's name……..
Design pressure……
Design temperature……..
Material
Process of manufacture……
Fully killed/rimmed…….
Chemical composition…….
Tubes
Process of manufacture……
Main dimensions……..
Tolerances……
Tensile strength……
Elongation percentage…….
Bend test……..
Flattening test……..
Crushing test……
Flare test……..
Flange test……
Bend test on weld……
Bulging test and drifting test (for copper and brass)……..
Heat treatment……
Hydraulic test…….

NOTE.- In addition, the following information in respect of the material shall be furnished in a tabular form in conformity with the requirements of Regulation 4(c)(vi) or the note thereto, as the case may be. This information may be given from the established test data or if the material is of standard quality, an extract from the standard may be furnished instead.

Metal temperature	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
E_t															
S_c															
S_r															

Tensile strength at 20°C……

Where

E_t = Yield at temperature t (0.2% proof stress).

**S_c = Average stress to produce an elongation of 1%(creep) in 100,000 hours at the various working metal temperatures.

**S_r = Average and lowest stress to produce rupture in 100,000 hours at various working metal temperatures.

Temperature range in the table may extend upto the limit of applicability of the material.

The value of S_c and S_r need be furnished only in respect of pipes/tubes intended to be used for working metal temperature above 454°C (850°F).

Certified that the particulars entered herein are correct.

The tubes have been manufactured to comply with the Indian Boiler Regulations for a maximum working pressure of _____ and a maximum temperature of _____ at our works above named and satisfactorily withstood a water test of _____on the _____ day of _____, 19___, in the presence of our responsible representative whose signature is appended hereunder.

Maker's Representative
(Name and signature)

Maker _____

We have satisfied ourselves that the tubes have been constructed in accordance with Chapter II. The tests conducted on the samples taken from the finished tubes, have been witnessed by us and the particulars entered herein are correct.

Place _____
Date _____

Name and signature of
Inspecting Authority.

NOTE (1).- This form is intended for the use of both tube manufacturers and tube fabricators. Only such of the columns or paragraphs that are applicable, or information that can be obtained and furnished from other certificates, need be filled or entered in this form.

NOTE (2).- In the case of fabrications made from steel tubes obtained from elsewhere, particulars in regard to the "material" and "Tubes" shall be taken from similar forms of certificates obtained in respect of pipes and noted in the appropriate columns or paragraphs.

In the case of tubes made from steel, made and tested by well-known Steel Makers in India or other countries particulars regarding the 'material' as certified by them (in any form) shall be noted in the appropriate columns or paragraphs in this 'certificate'.

FORM III-B (i)

(Certificate of Manufacture and Test)
REGULATION 4 (i)

Maker's name……
Intended working pressure…….
Maximum recommended metal temperature…….
Material……..
Process of manufacture……..
Fully killed/rimmed……
Chemical composition……
Tubes……
Process of manufacture……
Main dimensions……..
Tolerances……
Tensile strength……
Elongation percentage…….
Bend test……..
Flattening test……..
Crushing test……
Flare test……..
Flange test……
Bend test on weld……
Bending test and drifting test (for copper and brass)……...
Heat treatment……..
Hydraulic test……...

Note.- In addition, the following information in respect of the material shall be furnished in a tabular form as indicated. The information may be given from the established test data or if the material is of standard quality, an extract from the standard may be furnished instead.

Metal temperature	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
E_t															
S_c															
S_r															

Tensile strength at 20°C

Where

E_t = Yield point at temperature t (0.2% proof stress).

S_c = Average stress to produce an elongation of 1% (creep) in 100,000 hours at the various working metal temperatures.

S_r = Average and lowest stress to produce rupture in 100,000 hours at various working metal temperatures.

Temperature range in the table may extend up to the limit of applicability of the material.

The value of Sc and Sr need to be furnished only in respect of pipes/tubes intended to be used for working metal temperature above 454°C.

Certified that the particulars entered herein are correct.

The part has been designed and constructed to comply with the variations from the standard conditions laid down in the Indian Boiler Regulations, 1950, for material, design and construction features which have been permitted by the Board or the Inspecting Authority under the Indian Boilers Act, 1923 and satisfactorily withstood a water test of _____ on the _____ day of _____, 19__, in the presence of our responsible representative whose signature is appended hereunder.

Maker's Representative
(Name and Signature) Maker _____

We have satisfied ourselves that the tubes have been constructed in accordance with the variations from the standard conditions laid down in the Indian Boiler Regulations, 1950, for material, design and construction permitted by the Board. The tests conducted on the sample taken from the finished tubes have been witnessed by us and the particulars entered herein are correct.

Place_____ Name and Signature of
Date _____ Inspecting Authority

Note (1) This form is intended for the use of the both tube manufacturers and tube fabricators. Only such of the columns or paragraphs that are applicable, or information that can be obtained and furnished from other certificates, need be filled or entered in this form.

Note (2) In the case of fabrications made from steel tubes obtained from elsewhere, particulars in regard to the "material" and "Tubes" shall be taken from similar forms of certificates obtained in respect of tubes and noted in the appropriate columns or paragraphs.

In the case of tubes made from steel, made and tested by Well Known steel makers in India or other countries particulars regarding the 'material' as certified by them (in any form) shall be noted in the appropriate columns or paragraphs in this "certificate".

FORM III-C

Certificate of Manufacture and test of Boiler Mountings and Fittings

(REGULATION 269)

Name of part……
Maker's name and address……
……
Intended working pressure……..... .kg./cm^2 (lb./sq. inch)
Hydraulic test pressure……..kg./cm^2 (lb./sq. inch)
Main dimensions……
Drawing Nos……..
Identification Marks……
……
Chemical composition…….
Physical test results…….

(i) tensile strength……
(ii) transverse bend test…….
(iii) elongation……

Certified that the particulars entered herein by us are correct.

The part has been designed and constructed to comply with the Indian Boiler Regulations for a working pressure of _____ and satisfactorily withstood a hydraulic test using water or kerosene or any other suitable liquid to a pressure _____ on the _____ day of _____ 19___ in the presence of our responsible representative whose signature is appended hereunder:

Maker Representative
(Name and signature)

MAKERS_____

We have satisfied ourselves and the valve/fitting has been constructed and tested in accordance with the requirements of the Indian Boiler Regulations, 1950. We further certify that the particulars entered herein are correct.

Place_____

Name and signature of the
Inspecting Officer who
witnessed the tests.

Date_____ 19___.

Name and signature of the
Inspecting Authority

Strike out which is not applicable.

Note: In the case of valve chest made and tested by well known Foundries or Forges recognised by the Central Boilers Board in the manner as laid down in regulations 4A to 4H, particulars regarding the material as certified by them, in any form, shall be noted in the appropriate columns or paragraphs in the certificates and in case of certificates from Well Known Foundries or Forges is produced, such certificate may be accepted in lieu of the certificate from Inspecting Authority in so far as it relates to the testing of material specified in the Form.

FORM III-D

Certificate of manufacture and test
[Regulation 4(c)]

Certificate No……..
Date of Manufacture……
Name of Part……
Maker's Name and address……..
Code of Manufacture/Specifications……...
Material
Heat No……
Process of manufacture……
Fully killed/rimmed/semi killed……..
Chemical composition…….
Pipes
Main dimensions……..
Tolerances……
Mode of manufacture……...
Identification marks……
Bend Test……
Bend test on weld……
Flare test……..
Flattening test……..
Drift test……..
Tensile strength……
Crushing test……
Heat treatment……..
Flange test……
Final hydraulic test……..
Non-destructive examination……...

Certified that the particulars entered herein are correct.

The part has been manufactured to comply with the Indian Boiler Regulations at our Works above named and satisfactorily withstood a water test of _____ on the _____ day of _____19___ in the presence of our responsible representative whose signature is appended hereunder:

Maker's Representative (Name and signature)

Maker……...

Note: In the case of pipes made from steel, made and certified by well-known Steel Makers in India or other countries, particulars regarding the 'material' as certified by them (in any form) shall be noted in the appropriate columns or paragraphs in this certificate.

FORM III-E

(Certificate of manufacture and test)
[Regulation 4(f)]

Maker's Name……
Code of Manufacture/specifications……..
Material
Heat No……
Process of Manufacture……...
Fully killed/rimmed/semi killed……..
Chemical composition…….
Tubes
Process of manufacture……
Main dimensions……..
Tolerances……
Tensile strength……
Elongation percentage…….
Bend test……..
Flattening test……..
Crushing test……
Flare test……..
Flange test……
Bend test of weld…….
Bulging test and drifting test
(for copper and brass)…….……
Heat treatment…….
Hydraulic test……..
Non-destructive examination……..

Certified that the particulars entered herein are correct.

The Tubes have been manufactured to comply with the Indian Boiler Regulations at our works above named and satisfactorily withstood a water test of _____on the _____day of _____ 19___ in the presence of our responsible representative whose signature is appended hereunder:

Maker's Representative
(Name and signature)

Maker _____

Note:- In the case of tubes made from steel, made and certified by the Well-known Steel Makers in India or other countries, particulars regarding the 'material' a certified by them (in any form) shall be noted in the appropriate columns or paragraphs in this certificate.

FORM III-F

Certificate of Manufacture and test of castings and forgings
(Regulations 73 to 80 or 81 to 85 as applicable)

Certificate No. ……..
Name of part……..
Maker's name and address…….
……...
Main dimensions……
Drawing Nos. …...……..
Identification Marks……
Chemical composition…….
Physical test results……

(i) Tensile strength……
(ii) Transverse bend test…….
(iii) Elongation……

Certified that the particulars entered herein by us are correct. This satisfies the requirements of Indian Boiler Regulations, 1950.

Maker's Representative (Name and signature)

MONOGRAM/ SEAL

MAKERS_____

FORM IV

STEEL MAKER'S CERTIFICATE OF MANUFACTURE AND RESULTS OF TESTS
[REGULATION 4(c) (iv)]

We hereby certify that the material described below has been made by M/s. _____ by the *_____ process, as per specifications _____ and rolled by _____ and has been satisfactorily tested in the presence of our Test House Manager or his representative in accordance with the stipulated tests and tolerances.

For gothic bars/scelps, billets and hot rolled strips which are to be processed further by the same manufacturer for making tubes/pipes, the physical properties are not required to be mentioned by the steel manufacturer.

Test certificate No._____

Signature or initials of
Test House Manager
Dated_____

Order No.	Cast No.	Specification/ and grade	Deoxidation practice	Plate No.	No. of pieces

Wt Tonnes	Size (mm)	Heat Treatment	Chemical Analysis (Ladles)					
			C	Mn	P	S	Si	Other alloying Elements

Mechanical Properties						
Y.S. Kg/mm^2	U.T.S. kg/mm^2	Elongation %	Bend	Temp. Bend	Homo-geniety	Remarks

Despatch Advice No.	Dated	Wagon No.

Consignee _____
_____
_____

*Actual process used out of the following:-
(i) Basic Open-Hearth
(ii) Acid Open-Hearth
(iii)Basic Oxygen
(iv)Electric Furnace.

Note: Where the steel is manufactured by a maker, who is not recognised as a Well-known Steel Maker, the certificate of test shall be signed by the Inspecting Authority

FORM IV-A

CERTIFICATE OF MANUFACTURE AND RESULTS OF TESTS

IN LIEU OF FORM IV

[Regulation 4 (c) (iv)]

It is hereby certified that original steel Maker's certificate in Form IV contain following information in respect of the material used in the manufacture of boiler or parts thereof bearing Makers Number: Sample and according to Drawing Number:

Part of Boiler	Quantity	Cast/Heat No	Plate No.	Steel making Process	Specification	Deoxidation

Name of Steel Maker/ Part Maker	Test piece No.	Certificate No. & Date	Length/Breadth/ O. D. Thickness	Heat Treatment

% Chemical Analysis					
Cr	Mn	P	S	Si	Other alloying elements

Mechanical Properties				
Y.S. kg/mm^2	UTS (kg/mm^2)	Elongation % GL	Bend Test	Remarks

Official Seal

INSPECTING AUTHORITY

Counterfoil

No.

---

are hereby permitted to use the Boiler (Registry No.) Boiler Rating

made by

and bearing Maker's number at a maximum pressure of lbs.

per square inch pending the issue of or refusal of a certificate within six months from the date thereof.

after which period this order will become void.

Dated Inspector of Boilers.

No.

FORM V

[REGULATION 381 (C)]

PROVISIONAL ORDER UNDER SECTION 9
OF THE INDIAN BOILERS ACT OF 1923.

_____

_____

are hereby permitted to use the Boiler (Register No.) Boiler Rating

made by
and bearing Maker's number at a maximum pressure of lbs.
per square inch pending the issue of refusals of a certificate within six months from the date thereof.

after which period this order will become void.

Dated Inspector of Boilers

N.B..- This order must be produced on demand by any authorised persons and surrendered to Chief Inspector on receipt of orders.

FORM VI

BOILER INSPECTION DEPARTMENT

CERTIFICATE FOR USE OF A BOILER

(Regulation 389)

Registry Number of Boiler	Type of Boiler
Boiler Rating	Place and year of manufacture
Maximum Continuous Evaporation	
Name of Owner	
Situation of Boiler	
Repairs	
Remarks	
Hydraulically Tested on	to lbs. per sq. inch

I hereby certify that the above described boiler is permitted by me/the Chief Inspector under the provisions of Section 7/8 of the Indian Boilers Act, No. V of 1923, to be worked at a maximum pressure of lbs. to the square inch for the period from to .

The loading of the safety valve is not to exceed .....
.

Fee Rs. Paid on
Dated at this day of , 19___.

Inspector
Countersigned
Chief Inspector
See reverse for “Conditions”.

CONDITIONS

(Reverse of Form VI)

(1) No structural alteration, addition of renewal shall be made to the boiler otherwise than in accordance with section 12 of the Act.

(2) Under the provisions of Section 8 of the Act this certificate shall cease to be in force:

(a) on the expiry of the period for which it was granted; or
(b) when any accident occurs to the boiler; or
(c) when the boiler is moved the boiler not being vertical boiler the heating surface of which is less than two hundred square feet, or a portable or vehicular boiler; or
(d) when any structural alteration, addition or renewal is made in or to the boiler; or
(e) if the Chief Inspector in any particular case so directs when any structural alteration, addition or renewal is made in or to any steam-pipe attached to the boiler; or
(f) on the communication to the owner of the boiler of an order of the Chief Inspector or Inspector prohibiting its use on the ground that it or any steam-pipe attached thereto is in a dangerous condition.

Under Section 10 of the Act, when the period of a certificate relating to a boiler has expired, the owner shall, provided that he has applied before the expiry of that period for a renewal of the Certificate, be entitled to use the boiler at the maximum pressure entered in the former certificate, pending the issue of orders on the application but this shall not be deemed to authorise the use of a boiler in any of the cases referred to in clause (b), (c), (d), (e) and (f) of sub-section (1) of section 8 occurring after the expiry of the period of the certificate.

(3) The boiler shall not be used at a pressure greater than the pressure entered in the certificate as the maximum pressure nor with the safety valve set to a pressure exceeding such maximum pressure.

(4) The boiler shall not be used otherwise than in a condition which the owner reasonably believes to be compatible with safe working.

NOTE.- The particulars and dimensions regarding this boiler may be obtained by the owner on payment in the prescribed manner on application to the Chief Inspector.

FORM VII

INSPECTING AUTHORITY'S CERTIFICATE OF INSPECTION UNDER CONSTRUCTION DESIGNATION OF INSPECTION AUTHORITY

[Regulation 501 (e)]

We hereby certify that type, Economiser, consisting of sections and tubes to each section was constructed for a working pressure of ..... lbs. Messrs .... under our supervision and inspected at various stages of construction by the Inspecting Officer and that the construction and workmanship were satisfactory and in accordance with the standard conditions for the design and construction of Economiser laid down in Chapter XI of the Indian Boiler Regulations, 1950.

Identification mark on each section.
Branch Pipe on other pressure part.
Position of same

The sections on completion were subjected to a water pressure of ..... lbs. per sq. in. for ten minutes in the presence of the Inspecting Officer on and satisfactorily withstood the test in accordance with Regulation 504.

Samples of the material used in the constructions of the Economiser, were tested in the presence of the Inspecting Officer and were found to comply with the tests prescribed in Chapter XI of the Indian Boiler Regulations, 1950.

We have satisfied ourselves that the construction and dimensions of the Economiser are as shown in the Maker's Drawing No. signed by us and that the particulars entered in the Maker's certificate of manufacture in Form VIII countersigned by us are correct to the best of our knowledge and belief.

Dated at this day of , 19___.

Signature of Inspecting Authority

FORM VIII

Works Address

CONSTRUCTOR'S CERTIFICATE OF MANUFACTURE AND TEST

[Regulation 501 (d)]

1. Description	Type of Economizer No. of Sections Intended working pressure Year of manufacture Description	No. of tubes lbs. Total heating surface of tubes
2. Inspecting Authority	Economizer constructed under supervision of ……..... ..... Sections hydraulically tested for …. minutes and inspected after test by ……...	
3. Construction and Workmanship	Details are in Drawing No._____ All castings are well finished free from external defects, porous places and blow-holes and true to dimensions without warping. Where chaplets are used, there is satisfactory fusion with the metal. Chaplets are properly tinned with metal free from lead. All screw threads are of Whitworth form. All component parts are manufactured to limit gauges to secure interchangeability throughout.	
4. Economisers and fitting	Parts Material Maker Inspecting Officer Remarks	
Particulars of material used	Headers Tubes and/or Pipes Valve chests Bolt	

THICKNESS OF PARTS AND TENSILE TEST-LIMIT

5. Part of Economiser	Thickness in 32^{nds} of inch.	Tensile strength limits to tons	Elongation limits to %	Gauge length	Brand and No.
Headers…….. Tubes……. Bolts……...					

Certified that the particulars entered herein are correct and that the parts and fittings mentioned above have been used in the construction and fittings of the Economiser.

The particulars shown against the various parts used are in accordance with the Maker's certificates in our possession.

The design of the economiser in section and end view with principal parts fully dimensioned is that shown in Drawing No. . The Economiser has been designed and constructed to comply with the Indian Boiler Regulations for a working pressure of _____ lbs. per sq. in. at our Works abovementioned and the sections satisfactorily withstood a water test of _____ lbs. per sq. in. for _____ minutes on _____ day of _____19___ in the presence of our _____ responsible representative whose signature is appended hereunder.

Designation of Maker

Signature of the Engineer who witnessed the test.

Dated at _____ this _____ day of _____19___.

Signature of Inspecting Authority

NOTE.- The drawing of the Economiser and Maker's certificate of manufacture showing results of tests for tensile strength and elongation must accompany this certificate and if the economiser has been built under the supervision of an Inspecting Authority their certificate in Form VII must accompany.

FORM IX

(Regulation 528)

(National Emblem)

INDIAN BOILERS ACT, 1923

BOILER INSPECTION DEPARTMENT

ECONOMISERS

REGISTRY NUMBER

Memorandum of Inspection

or

Registration Book

MISCELLANEOUS

District ……

Owners……..

Address of Factory……

_____

Nearest Railway Station……

_____

Economiser Registered at……. on ……..

Register Book No……. page ……...

Registry Number…….verified on……

Approved Working Pressure…… lbs.……...

Economiser Rating…… Inspection fee……

Registration Book filled at……. on …….

Remarks on transfer etc…….

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

PROVISIONAL ORDER AND CERTIFICATE RECORD

Fee	Date of Payment	Date of Inspection	Certifi-cate No. and date	Period of Certifi-cate	Working pressure	Econo-miser Rating	Remarks and Inspector's initial

Type of Economiser……..

Maker……

Intended Working Pressure……...

Place and year of make…….

Maker's No……

Description of Economiser……

No. of tubes……. Length…….Dia……...

Thickness……...

Internal dimensions……...

No. of Headers……..

Thickness of Headers……

Length of top Branch pipe …… Thickness ……

Length of Bottom Branch Pipe…….Thickness……

Dimensions of cap openings……

Diameter of cap bolts……

MOUNTINGS

No.	Diameter	Type	Position	Material
Relief Valve…….				
Stop Valve……...				
Blow Down……..				
Thermometers……..				
Pressure Gauge……				

Additional Fittings……

MAKER'S CERTIFICATE

Name of Maker……

Maker's Hydraulic Test Pressure……..

Maker's Drawing No…….

Name of Inspecting Authority……...

Name of Maker of Material……..

Process……[Tubes……..
[Headers……..
[Bolts……

Test Results

Tubes……..T E

Headers……...T E

Pipes……T E

Bolts……T

% Sulphur
% Phosphorus
Maker's Identification Marks
Position

CALCULATIONS

HEADERS

TUBES

BRANCH PIPES

BOLTS

HEATING SURFACE

Total Heating Surface……

Economiser Rating……

Calculations made by	submitted on	
Calculations checked by	on	
Least pressure, that for		lbs.
Approved working pressure		lbs.
Chief Inspector's remarks and signature		

INSPECTOR’S NOTES

Counterfoil

No.

Name of the person or firm to which Provisional Order is granted.

Description of Economiser

Maker's No.

Rating

Pressure permitted

Period

Date

Inspector

FORM X
Regulation 525 (e)

No.

PROVISIONAL ORDER UNDER THE INDIAN BOILERS ACT, 1923

_____

_____

are hereby permitted to use the

Economiser Ry. No. and

Economiser Rating made by

and bearing Maker's No.

at a maximum pressure of lbs. per sq. in./

maximum temperature of °F pending the

issue or refusal of a certificate within six months from the

date hereof after which period this order will become void.

Dated at _____ this _____ day of _____19___.

INSPECTOR

FORM XI

_____ Boiler Inspection Department

CERTIFICATE FOR THE USE OF AN ECONOMISER
(Regulation 530)

Registry Number of Economiser Type

_____

No. of tubes

Number of Headers

_____

Economiser Rating Place and year of manufacture

_____

Name of owner

_____

Situation of Economiser

_____

Repairs

_____

*Remarks

Hydraulically tested on _____ to _____kg. per sq. cm.____
lbs. per sq. in.

I/We hereby certify that the above described Economiser is permitted by me/Chief Inspector under the provisions of Section _____ of the Indian Boilers Act, 1923 (V of 1923) to be worked at a maximum pressure of _____ lbs. per sq. in./maximum temperature of °F or the period from _____ to _____.

The loading of the safety valve is not to exceed. lbs.

Fee Rs. paid on

Dated at
This day of

INSPECTOR COUNTER SIGNED

CHIEF INSPECTOR

REVERSE OF FORM XI

CONDITIONS

(1) No structural alteration, addition or renewal shall be made to the Economiser without a written permission from the Chief Inspector.

(2) This certificate shall cease to be in force –

(a) on the expiry of the period for which it was granted, or
(b) when any accident occurs to the Economiser, or
(c) when any structural alteration, addition or renewal is made in or to the Economiser, or
(d) if the Chief Inspector in any particular case so directs when any structural alteration, addition or renewal is made in or to the Economiser, or
(e) on the communication to the owner of the Economiser of an order of the Chief Inspector or Inspector prohibiting its use on the ground that it is in a dangerous condition.

(3) The Economiser shall not be used at a pressure greater than the pressure/temperature entered in the certificate as maximum pressure/temperature not with the relief valve set to pressure/temperature exceeding such maximum pressure/temperature.

(4) The Economiser shall not be used otherwise than in a condition which the owner reasonably believes to be compatible with safe working.

N.B.- Details regarding this Economiser are recorded in a Registration Book No._____ of which a copy may be obtained on payment on application to the Chief Inspector.

FORM XII

(Regulation 613)

Record of Welder's Qualification/Requalification Tests (Indian Boiler Regulations, 1950).

Place of test_____

Date_____

Name of Welder……

Father's name……

Date of birth…… Address……

Service of experience on Gas/Electric Arc……..years

Signature of Welder……..

Names and addresses of the firms where trained……..

……..

……..

Tested on……...
(Plate, pipe, tube)

Gas or electric A.C./D.C……...

Kind of test……. Position…….
(Groove/Fillet/Branch)

Thickness of material used…… Diameter and thickness of pipe,

branch or tubes used…….

Quality of base material and electrode or filler rod……..

……..

Results of Observations

	Marks	
	Maximum	Awarded
A. PROCEDURE		
1. Preparation of specimen……	3	
2. Size & grade of electrode or filler rod……	2	
3. Number of runs and manipulation of control…….	5	
B. VISUAL INSPECTION		
4. Root penetration…….	10	
5. Freedom from undercut……..	5	
6. Disposition of runs…….	2	
7. Uniformity of surface…….	1	
8. Shape of profile……	1	
9. Smoothness of joints……	2	
10. Freedom from cavities & slags……..	5	
11. Dimensions of weld deposit……	1	
12. Quality of weld metal (Overheating, surface cracks, spongy surface etc.)…….	3	
C. PHYSICAL TEST		
13. Face bend test……..	10	
14. Root bend test……..	20	
D. ETCH TEST		
15. Disposition of runs……..	2	
16. Degree of fusion……..	5	
17. Root penetration……..	11	
18. Slags inclusions and porosity……..	5	
E. FRACTURED SURFACE		
19. Quality of weld metal (Excessive oxidation, carburisation, overheating, roughness, porosity, appearance)……	7	
	100	

Signature of Competent Authority

OBSERVATION ON RADIOGRAPHIC EXAMINATION (If conducted)……
……
……
Marks awarded…….....%
Results of Oral or Written examination……
Marks awarded……..... %.

GENERAL REMARKS OF COMPETENT AUTHORITY……
……..
……..
……...
……...
……...
……...
……...
TYPE AND CLASS OF WELDING QUALIFIED……..
…….in Gas or Electric Arc welding.
PERIOD OF VALIDITY OF CERTIFICATE

FROM…… TO ……..

PLACE…….

DATE……

COMPETENT AUTHORITY

FORM NO.XIII

Qualified Boiler Welder's Certificate

ISSUED UNDER

THE INDIAN BOILER REGULATIONS, 1950

Photo Passport Size	Name of Welder…… Father's name…… Date of birth……..

Seal and Signature of Competent Authority

Identification marks……..

Left hand thumb impression …….

Signature of Welder…….....

Address of Welder…….....

……

Period of Validity

From To

This is to certify that Shri……..…….....……son of
Shri …… has been examined and tested in the prescribed manner in the presence of ……..
(Representative of Competent Authority)
and is deemed to have satisfactorily proved his ability to make sound welds as per particulars given below and is hereby authorised to undertake such welds. He is authorised/not authorised to undertake welding where radiographic examination is necessary under the Regulations.

Granted this…… day of ……. _____ under the seal and authority of ……...

Seal

(Representative of Competent Authority)

Particulars:-

*Particulars shall contain information on the following:-

Tested on	Plate/Pipe/Tube with position
Date	
Material	Mild steel or alloy steel
Process	
Class of welding	
Backing strip	
Electrode	Class (Carbon or alloy steel)
Filter rod	Type
Test piece X-rayed or not.	

Period of validity

From To

Employment particulars

From	To	Name of Employer	Work on which engaged	Signature of employer

(COVER PAGE)

FORM XIV

[Regulation 394 (c)]

National Emblem

Indian Boilers Act, 1923

Boiler Inspection Department

Steam Pipes and Connected Fittings

Identification Number

_

Memorandum of Inspection Book

FORM XIV

[Regulation 394 (c)]

National Emblem

Indian Boilers Act, 1923

Boiler Inspection Department

Steam Pipes and Connected Fittings

Identification Number

_

Memorandum of Inspection Book

MISCELLANEOUS

District……..

Owner……

Address of Factory……

Work of Factory:

Registration Number of Boilers to which the pipes and fittings, particulars of which are given in this Memorandum are connected.

Remarks

DATE PARTICULARS OF ADDITIONS & ALTERATIONS

PLAN OF STEAM PIPES & THEIR CONNECTED FITTINGS

FEE AND APPROVAL TO PLAN RECORD

Drawing No.	Total length of Steam Pipes	No. of connected vessels	Fee	Date of payment	No. & date of approval of Plan & Layout	W.P. approved kg./cm^2	Temp. allowed °C	Remarks & initial of Inspector

STEAM PIPES – PARTICULARS AND DIMENSIONS

Situation ……
Ry. No. of connected Boilers…….
Steam piping System include……
……..……
……
……...
Pipes Material…….Diameter (outside)…….
Pipes Thickness…… Make……...
Attachment of Flanges……..
Elbows, Tees etc……
……...……...……
……
……..
Support…….
Flexibility……..
Drainage……..……
……..……
……..……
……...
Feed Pipes……
Outside Dia……. Thickness……
Make……
Max. Pressure……. Max. Temp……..

Connected Vessel……
No.
Type……
……
……
……
……...
Max. Design Press…….. Max. Design Temp……..
……
……
……...
Date of Installation……
First Inspection inside &.....……...
Outside……
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First Hydraulic Test to…….kg/cm^2……By…… on……...
Remarks ……
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CALCULATIONS

Steam Pipes:………………………………………………………………………

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CALCULATIONS

Feed Pipes……………………………………………………………………………

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CALCULATIONS

Steam Pipe Fittings and Vessels: ……………………………………………………..
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CALCULATIONS

CALCULATIONS

INSPECTOR'S NOTES – contd.

FORM XV-A

(Regulation 4A (2)

QUESTIONNAIRE TO BE ANSWERED BY FIRMS SEEKING RECOGNITION BY THE CENTRAL BOILERS BOARD TO BECOME AN INSPECTING AUTHORITY UNDER THE INDIAN BOILER REGULATIONS, 1950.

1. The registered name and address of the association.
2. Address for correspondence
3. The year in which the association was established.
4. Is your association recognised by the Government?
5. Have you any Branch or Associate Office?
   If so, please give their names and addresses.
6. How long has your Association been functioning as an Inspecting Authority? If it is a registered Company, please give the date of registration.
7. Please give details of classes of machinery which you have so far been authorised to examine and code under which this is being done.
8. Please state the types, size and the range of working pressure of the boilers which you have so far inspected during construction as an Inspecting Authority, also state the classes of service you render, namely:-
   (a) Please name the various stages of manufacture at which inspections are carried out.
   (b) Excluding inspection at the steel Works.
   (c) Only hydraulic test after the manufacture of the boiler has been completed.
9. How many Inspecting Officers have you in your employment? Please give details of the qualifications held by those Officers.
10. Have you any Testing Laboratory of your own to conduct all destructive and non-destructive tests required in connection with the manufacture of boilers?
11. Are you prepared to conduct the work of Inspection of boilers, economisers and their accessories strictly in conformity with the Indian Boiler Regulations, 1950?
12. Are you prepared to accept full responsibility for the certificate issued by you?
13. Has your request for recognition as an Inspecting Authority been rejected by any Authority? If so, please give details.
14. Are you prepared to issue certificates for the products, you inspect, in the formats of the Indian Boiler Regulations?
15. Are you aware that the recognition is for a period of 3 years only, which is renewable after every 3 years on fresh assessment?

FORM XV-B

[Regulation 4 A (2)]

QUESTIONNAIRE FOR ELICITING INFORMATION REGARDING THE COMPETENCY OF A FIRM TO BE RECOGNISED AS "COMPETENT AUTHORITY" UNDER REGULATION 4A(2) OF THE INDIAN BOILER REGULATIONS.

1. Registered name and address of the firm.
2. Address for Correspondence
3. Year in which the Organisation was established.
4. Address of branch or associate office, if any.
5. Principal work of the organisation.
6. Does the organisation have any training section for the welders? If so, details of the scheme to be stated.
7. Does the organisation regularly conduct tests on welds done by its welders? If so, the code followed and the details of tests carried out may please be stated.
8. What are the facilities that can be provided or availed of by the organisation for conducting the tests?
9. Is the organisation prepared to undertake testing of welders employed by other organisation?
10. Whether the organisation is prepared to conduct tests as per requirements of the IBR?
11. The amount of fee which the organisation would charge a candidate for conducting a test for the issue of certificate. Estimates under the following heads may be given:
    (a) For the supply of tests pieces, electrodes and/or filler rods.
    (b) For the use of welding machine.
    (c) For machining the test pieces and preparation of specimen.
    (d) For conducting mechanical tests (including specimen preparation).
    (e) For non-destructive testing.
12. Is the organisation prepared to examine and issue certificate to welders in accordance with the requirements of the IBR, 1950?
13. Is the organisation prepared to take full responsibility for certificates issued by it.
14. Are you aware that the recognition is for a period of 3 years only which is renewable after every 3 years on fresh assessment.

FORM XV-C

[Regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY STEEL MAKER SEEKING RECOGNITION BY CENTRAL BOILERS BOARD TO BE NOTIFIED AS 'WELL KNOWN STEEL MAKERS' UNDER REGULATION 4A(2) OF THE INDIAN BOILER REGULATIONS, 1950.

1. Registered Name and address of the firm.
2. Works address
3. The year in which the factory was established:
4. Capacity for production of steel:
5. Process of Manufacture of Steel:
6. Variety of Steel Products:
7. Range of Steel produced in each variety:
8. Various National and International Standards to which the Steel Products are manufactured:
9. Testing facilities available within the Works:
10. Types of tests conducted:
11. If so, by whom conducted:
12. Are the tests conducted by the firm acceptable to the other organisations of the Country? If so, by whom?
13. Is the firm prepared to conduct tests in accordance with the IBR?
14. Have they been recognised as "Well Known Steel Maker" in any other country?
15. Whether they manufacture steel from the Ore itself or from ore and Scrap or Scrap only:
16. Whether the firm is prepared to furnish certificates under the provision of IBR.
17. Whether the firm is agreeable to show their manufacturing process and in-house testing facilities to a team consisting of three members appointed by the Board.
18. Are you aware that the recognition is for a period of 3 years only which is renewable after every 3 years on fresh assessment?

FORM XV-D

[Regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY FOUNDRY/FORGE SEEKING RECOGNITION BY CENTRAL BOILERS BOARD TO BE NOTIFIED AS "WELL KNOWN FOUNDRY/FORGE UNDER REGULATION 4A(2) OF THE INDIAN BOILER REGULATIONS, 1950.

1. The Registered name and address of the firm:
2. Works address
3. The year in which the factory was established.
4. Capacity of the Foundry/Forge:
5. (i) Capacity for production of Forgings/Castings:
   (ii) Maximum weight and size of Forgings/Castings.
6. Detailed description of the type of job done by them.
7. Materials of Castings/Forgings (ferrous-plain or alloy steel, non-ferrous alloys).
8. Range of forgings/casting produced in each variety.
9. Testing facilities available within the works.
10. Details of testing facility, namely chemical and physical tests etc.
11. Types of test conducted.
12. If so, by whom conducted?
13. Are the tests conducted by the firm itself acceptable to the other organisations of the country? If so by whom?
14. Is the firm prepared to conduct tests in accordance with the Indian Boiler Regulations, 1950?
15. Have they been recognised as "Well Known Foundry/Forge" in any other country?
16. Whether the firm is in a position to produce Forgings/Casting in accordance with any national/International specifications fulfilling the minimum requirements of IBR, 1950.
17. Whether the firm has any previous experience to produce Forgings/Castings in accordance with the provision of IBR under the inspection of any recognised Inspecting Authority.
18. Whether the firm is prepared to furnish Certificates under the provision of IBR, 1950.
19. Whether the firm is agreeable to show their process of manufacture, in-house testing facilities to a team of members appointed by Central Boilers Board.
20. Are you aware that the recognition is for a period of 3 years only, which is renewable after every 3 years on fresh assessment?

FORM XV-E
[Regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY TUBE/PIPE MAKER SEEKING RECOGNITION BY CENTRAL BOILERS BOARD AS 'WELL KNOWN TUBE/PIPE MAKER UNDER IBR, 1950.

1. Registered name and address of the firm.
2. Works address
3. Registration No. and year of registration:
4. Capacity of production of Tube/Pipe and the tonnage details per year from the beginning.
5. Reasons for seeking recognition under IBR.
6. Steel grades of Tube/Pipes under production:
7. Size range of Tubes/Pipes under production:
8. Process of manufacture of Tube/Pipes:
9. (a) Whether the firm is producing the raw material or purchasing the raw material.
   (b) If the raw material is purchased, give the details of purchase so far.
      (i) from well known steel maker under IBR.
      (ii) from non-recognised firm.
10. If purchase is as per 9(b)(ii) state whether the raw material is tested at Tube maker's/Pipe maker's premises under IBR.
11. If the firm is producing raw material, state whether the firm is recognised as Well Known steel maker under IBR.
12. Major manufacturing facilities available with the firm:
13. Testing facilities available with the works:
14. Types of tests conducted on Tubes/Pipes (enclose complete quality control plan from raw material stage to finished stage along with the quality control & inspection personnel of the firm).
15. The details of failures and rejection
    (1) By NDT
    (2) By Destructive Testing.
16. Whether the firm is in a position to manufacture Tubes/Pipes and also provide for their necessary testing facilities in accordance with the provision in IBR, 1950.
17. The name of the firms to whom the firm has supplied Tubes/Pipes:
18. Whether the firm is agreeable to show their manufacturing process and in-house facilities to a team consisting of three members appointed by the Board.
19. Whether the firm is aware of the fact that the recognition is for a period of three years only, which is renewable after every three years term on fresh assessment.

FORM XV-F

(See regulation 4A (2)

QUESTIONNAIRE TO BE ANSWERED BY A LABORATORY SEEKING RECOGNITION BY CENTRAL BOILERS BOARD AS A WELL-KNOWN MATERIAL TESTING LABORATORY UNDER SUB-REGULATION (2) OF REGULATION 4A OF THE INDIAN BOILER REGULATIONS, 1950.

1. The Registered name and Address of the Laboratory:
2. Address of the Laboratory:
3. The year in which the laboratory was established:
4. (a) Whether the Laboratory is recognised by the Central Government or by a State Government:
   (b) If so, please furnish particulars of recognition:
5. Name and address of branch or associate Laboratory, if any:
6. How long the Laboratory has been functioning for testing of the products?
7. Equipment or machines available in the laboratory for carrying out the non-destructive or destructive testing:
8. Type and range of tests carried out by the Laboratory:
9. Details of testing personnel and their qualifications or experience:
10. Are you prepared to conduct the testing of specimens strictly as per the requirements of the Indian Boiler Regulations, 1950?
11. Has your request for recognition as an approved Laboratory been rejected by any authority? If so, please give details.
12. Are you prepared to issue the certificates for the products you test in the formats of the Indian Boiler Regulations?

Note: The recognition is valid for a period of 3 years only, which is renewable for 3 years on fresh assessment.

FORM XV-G
[See regulation 4A (2)]

Questionnaire to be answered by firm seeking recognition by Central Boilers Board as Remnant Life Assessment Organisation under regulation 391A of the Indian Boiler Regulations, 1950.

1.	The Registered Name and Address of the firm	:
2.	Address of the firm	:
3.	The year in which the firm was established	:
4. (a)	Whether the firm is recognised by the Central Government or by State Government	:
(b)	If so, furnish particulars of recognition	:
5.	Name and address of branch or associate firm, if any	:
6.	How long your firm has been functioning for Remnant Life Assessment of boilers and Boiler Parts	:
7.	Equipment or machines available in the Laboratory for carrying out the non-destructive or destructive testing	:
8.	Type and range of tests carried out by the firm	:
9.	Details of testing personnel and their qualifications and experience	:
10.	Are you prepared to conduct the testing of specimens strictly as per the requirements of the Indian Boiler Regulations, 1950?	:
11.	Has your request for recognition as an approved organisation been rejected by any authority? If so, please give details	:
12.	Are you prepared to issue the certificates for the tests recommended in the formats of the Indian Boiler Regulations?	

SIGNATURE & SEAL

Note:- The recognition is valid for a period of three years only which is renewable for three years on fresh assessment.

FORM XVI-A

(Regulation 4C (2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR INSPECTING AUTHORITY

This is to certify that the Inspection and Quality Management System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C(2) of the Indian Boiler Regulations, 1950, as an INSPECTING AUTHORITY.

This Certificate is valid for three years, i.e. upto……..

Validity is subject to the adherence to the quality Control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-B

(Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR COMPETENT AUTHORITY

This is to certify that the Examination of Welder System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C(2) of the Indian Boiler Regulations, 1950, as a COMPETENT AUTHORITY.

This Certificate is valid for three years, i.e. upto……..

Validity is subject to the adherence to the quality Control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-C

(Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR WELL-KNOWN STEEL MAKER

This is to certify that the Inspection and Quality Management System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C(2) of the Indian Boiler Regulations, 1950, as WELL KNOWN STEEL MAKER, for the manufacture of _____
_____

This Certificate is valid for three years, i.e. upto_____
_____

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____

Secretary

FORM XVI-D

(Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR WELL-KNOWN FOUNDRY

This is to certify that the Inspection and Quality Management System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C (2) of the Indian Boiler Regulations, 1950 as a WELL KNOWN FOUNDRY.

This Certificate is valid for three years, i.e. upto _____

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-E

(Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR WELL KNOWN FORGE

This is to certify that the Inspection and Quality Management System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C (2) of the Indian Boiler Regulations, 1950 as a WELL KNOWN FORGE.

This Certificate is valid for three years, i.e. upto_____

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-F

(Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR WELL KNOWN TUBE MAKER

This is to certify that the Inspection and Quality Management System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C(2) of the Indian Boiler Regulations, 1950, as a WELL KNOWN TUBE MAKER for the manufacture of Tubes of Sizes from _____ to _____
_____

This certificate is valid for three years, i.e. upto _____
_____

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-G

(Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL FOR WELL KNOWN PIPE MAKER

This is to certify that the Inspection and Quality Management System of:

M/s. _____
_____
_____

has been evaluated by the Central Boilers Board and has been granted recognition under regulation 4C(2) of the Indian Boiler Regulations, 1950, as a WELL KNOWN PIPE MAKER for the manufacture of pipe of sizes from _____ to _____
_____

This Certificate is valid for three years, i.e. upto _____
_____

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-H

(See Regulation 4C(2)

Serial No.

National Emblem

CENTRAL BOILERS BOARD
CERTIFICATE OF APPROVAL AS WEL-KNOWN MATERIAL
TESTING LABORATORY

This is to certify that after evaluation of the inspection and material testing system of the following laboratory, the Central Boilers Board has granted recognition to it under sub-regulation (2) of regulation 4C of the Indian Boiler Regulations, 1950, as a Well-known Material Testing Laboratory.

M/s. _____
_____
_____

_____

This Certificate is valid for three years, i.e. upto_____
_____

Note:- The validity is subject to the quality controls prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVI-I
[See Regulation 4C(2)]

Serial No.

National
Emblem

CENTRAL BOILERS BOARD

CERTIFICATE OF APPROVAL AS WELL KNOWN REMNANT LIFE ASSESSMENT ORGANISATION

This is to certify that after evaluation of the inspection and material testing system of the following firm, the Central Boilers Board has granted recognition to it under sub-regulation (2) of regulation 4C of the Indian Boiler Regulations, 1950 as a Well Known Remnant Life Assessment Organisation.

M/s._____
_____
_____

This certificate is valid for three years, i.e. upto_____

_____
Date of Issue

Approval Certificate No._____

_____
Secretary

FORM XVII
CERTIFICATE OF MANUFACTURE AND TEST
FOR SMALL INDUSTRIAL BOILERS
(MANUFACTURED UNDER CHAPTER XIV)

1. Maker's name_____ Year of make_____

2. Manufactured for

3. Location of installation

4. Boiler identification Inspecting Officer's Stamp

5. Drawing no._____ Alteration no._____

5A. Design code_____ Working Pressure (kg/cm^2) _____

6. Size of Boiler

Length (metres)	Width (metres)	Height(metres)	Diameter(metres)

7. Shell/Furnace/Tube plates/Flange details

Material specification	Chemical composition					Mechanical properties		
	C	Si	Mn	P	S	YS	UTS	% EL
Shell…….....								
Furnace…….....								
Tube plates…….....								
Flange…….....								
Boiler tubes/pipes/pads details…….....								
Diameter Thickness Material specification								
	Chemical composition					Mechanical properties		
	C	Si	Mn	P	S	YS	UTS	% EL
Tube ...……								
Pipes……								
Pads……								

8. Volumetric Capacity ……

9. Heating Surface (sq. metres)…….....……

10. Nozzle Connection
    (a) Steam Outlet…….
        (No., Size and Type of Nozzles)

(b) Safety Value…….
(No., Size and Type of Nozzles)
(c) Auxiliary (Air Vent)……..……..
(Size and Type)
(d) Blow-off Valve……
(No., Size and Type of Nozzles)
(e) Feed Valve……
(No., Size and Type of connection)

11. Shop Hydro Test Pressure (kg/cm^2)_____ date _____

Signature of Manufacturer

We certify that the above boiler constructed under our supervision and inspected at various stages of construction by the inspecting officer and that the construction, workmanship were satisfactory as per Indian Boiler Regulations.

Inspecting Officer Signature of Inspecting Authority

Dated _____this _____ day of _____ 19.....

FORM – XVIII

{See regulation 392(4)}

Questionnaire form for repairer of boilers/economiser/steam line/feed water lines etc. under the Indian Boiler Regulations, 1950.

1. Registered name of the firm and its permanent address :

2. Year of establishment :

3. Classification applied for –
   (a) Class I (pressure ≥ 17.5 kg/cm^2) :
   (b) Class II (pressure < 17.5 kg/cm^2 and ≥ 7.5 kg/cm^2 :
   (c) Class III (pressure < 7.5 kg/cm^2) :

4. Type of jobs executed by the firm earlier, with special reference to their maximum working pressure, temperature and the materials involved, with documentary evidence :

5. Whether the firm has ever been approved by any Boilers' Directorate/Inspectorate ? If so, give details :

6. Whether having rectifier/generator, grinder, general tools and tackles, dye penetrant kit, expander and measuring instruments or any other tools and tackles under regulation 392(5)(i). :

7. Detailed list of technical personnel with Xerox copy of the Welders' current certificate issued under the Regulations who are permanently employed with the firm :

8. How may working sites can be handled by the firm simultaneously? :

9. Whether the firm is prepared to execute the job strictly in conformity with the regulations and maintain a high standard of work ? :

10. Whether the firm is prepared to accept full responsibility for the work done and is prepared to clarify any controversial issue if required? :

11. Whether the firm is in a position to supply materials to required specification with proper test certificates if asked for? :

12. Whether the firm has an internal quality control system of their own?
If so, give details :

13. Qualification and experience of the personnel employed :

Date: Signature of the authorised
Place: signatory of the firm with stamp.

Note: 1. The recognition of the firm as a repairer shall be for a period of two years, thereafter they shall apply for renewal of their recognition at least two months before the expiry of the said period.

2. In case the repairer is found indulging in violating the provisions of the Act/Regulations knowingly or unknowingly, the firm shall be blacklisted under intimation to Chief Inspectors or Directors of Boilers of all the States/Union territories and renewal shall not be done in any case.