An ISO 9001 Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant**)**
Tiruchirappalli – 620014, TAMIL NADU, INDIA
MATERIALS MANAGEMENT

TITLE: Supply of Hemispherical Dished Ends to BHEL Trichy	Phone: +91 431 2577426 / 2575329 Fax : +91 431 2520 719 Email : tantuway@bheltry.co.in geetha@bheltry.co.in

Reference Number: 1401500054	**Date: 22.08.2015**	**Due date for submission of offer : 15.09.2015**

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order.

Please note that under any circumstance both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the date tender opening.

BHEL / Trichy is looking for Hemispherical Dished Ends to BHEL Trichy as per the attached documents.

BHEL technical terms & conditions and all annexures can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website http://tenders.gov.in (public sector units) Bharath Heavy Electricals Limited) under reference "**1401500054**"

Offer should reach us before 14:00 hours on the due date of 15.09.2015.	Yours Faithfully, For **Bharath Heavy Electricals Limited** Sr. Engineer / MM / Purchase - C&F

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE :2577480
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: skraman@bheltry.co.in,
nagarjuna@bheltry.co.in

429-002/A

Enquiry No	Enquiry Date	Due Date for Quotation
1401500054	22.08.2015	15.09.2015

Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order.
Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date & Enq. Due date must be written on all three covers.

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	920841930000 HSDE OD 660x81.25-SA234WP91 3-04-321-02705-TDC:423/07	NO	40.000	16.00	15.04.16
				24.00	30.09.16
20	920841940000 HSDE OD 762 x 90.25(NOM) - SA234WP91 3-04-323-02706-TDC:423/07	NO	20.000	8.00	15.04.16
				12.00	30.09.16
30	920849750000 HSEC-OD812.8X90(MIN)/SA234WP12CL1 3-07-125-11249-TDC:432/03	NO	10.000	4.00	15.04.16
				6.00	30.09.16

General Note:

1) Supply of Hemispherical Dished Ends shall be strictly as per the material specification mentioned against each item of the enquiry.

2) Supply shall be as per TDC 423/07 & TDC432/03.

3) Inspection by authorised inspection agency as listed in the annexure enclosed.

4) Supply of materials shall be as per latest IBR amendment dt. 15.04.15 enclosed along with the enquiry.

5) Delivery Conditions:

a)For Indigenous bidders - Ex-works offers will not be considered. Bidders should submit their offer on FOR Destination, BHEL Stores, Trichy basis. The quote shall

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED
PRAKASH TANTUWAY
Senior Engineer
Purchase / MM / C&P
BHEL, TRICHY - 620014
(FOSSIL BOILERS)
Yours faithfully,

BHARAT HEAVY ELECTRICALS LIMITED

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HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
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nagarjuna@bheltry.co.in

1401500054 / 22.08.2015 23505

include all charges, including testing, packing, inspection,freight and insurance charges, etc.

A. Imports:

b)Bidders should submit their offer for net FOB (nearest port) and CFR, Chennai with freight break up details. BHEL reserves the right to order on FOB or CFR basis. If FOB rates are not indicated, offer may be liable for rejection.

FOR CFR INCO TERMS

c)In the case of CFR terms, the following points are to be addressed in the offer:

1.,,Shipment Mode: Break Bulk (or) Container (To be specified clearly).

2.,,The freight charges quoted should be on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost.

d),,In case of shipment through Containers on CFR basis, the BL should bear the endorsement that "14 free days for Container Detention is applicable".

6) Liquidated Damages for staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

7) a) Please confirm that the items for which the delivery date falls on 15.04.16, the supply has to be commenced from 15.04.16 onwards.

b) The manufacturing and execution of the last three units (materials with delivery date as 30.09.16) by the L1 suppliers shall be commenced only after the despatch and acceptance of the materials of the first two units (materials delivery date as 15.04.16) and clearance from BHEL.

8) All enquiry terms and conditions are attached along with the enquiry. Bidders shall sign and confirm against each point of TERMS AND CONDITIONS and submit along with the offer.

The offers should reach us 30 minutes before the time of opening of tenders. The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED
PRAKASH TANTUWAY
Senior Engineer
Purchase / MM / C&F
BHEL, TIRUCHY - 620 014
(FOSSIL BOILERS)
Yours faithfully,

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
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E-mail: skraman@bheltry.co.in,
nagarjuna@bheltry.co.in

1401500054 / 22.08.2015 23505

All the tenders may be addressed to the following address:

The Tender Opening Cell / MM
Room No: 26, Building 24, Ground Floor
Bharat Heavy Electricals Limited
TIRUCHIRAPALLI 620014

In case personal delivery of the offer, it shall be dropped into the respective box kept in Room No: 26, after duly entering the data in the system.

Offers will be accepted only up to 14.00 Hrs on the due date. Therefore, vendors shall ensure to submit the offers well before this time. All due date extension requirements should be addressed to the respective Purchase mail IDs. All the due date extension requests from vendors will be considered only up to 48 hours before the due date and time.

Vendors are requested to avoid submission of offers through e mail / fax. In case of any unavoidable situation, offers shall be sent through e mail to the following mail ID only tender_cell@bheltry.co.in.

As tenders are being opened by Common Tender Opening Cell, offer covers should be sealed with tenderer's distinctive seal and super scribed with correct Tender No. item of supply and due date of opening.

The offers will be opened at 14.30 hrs on the due date of the tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

The bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to fraud prevention policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

Enclosures:

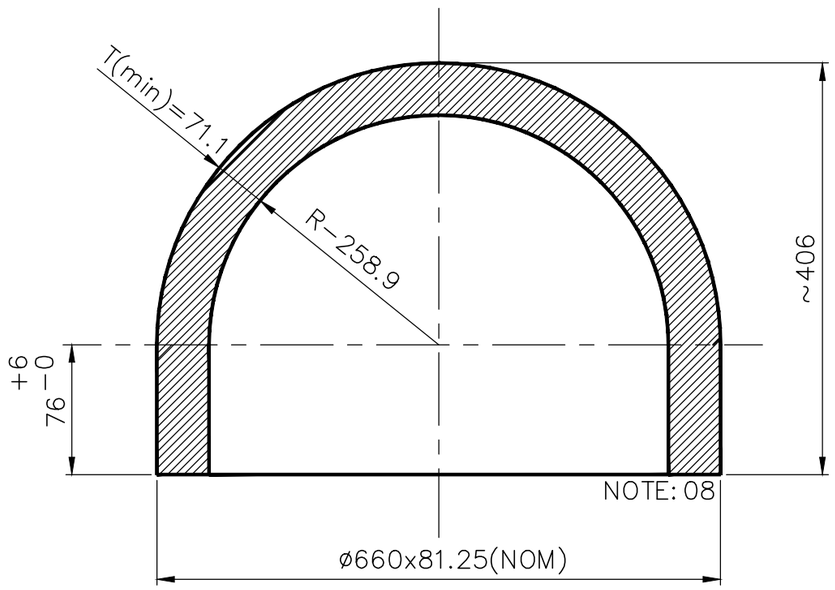
"LD clause has to be confirmed without fail."

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED
PRAKASH TANTUWAY
Senior Engineer
Purchase / MM / C&F
BHEL, TIRUCHY - 620 014
(FOSSIL BOILERS)
Yours faithfully,

DRAWING NO: 3-04-321-02705

ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP



NOTES:

01. DESIGN MANUFACTURE AND INSPECTION AS PER IBR.
02. FOR TOLERANCES REFER STD.DRG.NO: 4-03-000-00053.
03. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
04. NORMALISING AND TEMPERING IS TO BE DONE AFTER HOT FORMING.
05. NO THICKNESS GREATER THAN 152.4mm SHALL BE USED WITHOUT PRIOR BHEL APPROVAL.
06. FITTING SPECIFICATION : SA234 WP91

△01

08. THE FORMED HEMISPHERICAL END COVER SHALL BE SUPPLIED WITH PLAIN END.

FITTING MATERIAL CODE: 920841930000

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C	UNIT	UNIT WEIGHT	GS
		HS END COVER				SA 234 WP91	A		400.000	
					VAR NO	MATERIAL SPECN		D1	QUANTITY	

REV	DATE	ALTERED :K.S.
01	31.07.12	CHD & APPD: RAJA.K.
ZONE	NOTE -7 DELETED.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI – 620014

	NAME	SIGNATURE	DATE	NO. OF VAR
DRN	K.S		03.02.10	
CHD	I.K.S		04.02.10	
APPD	I.K.S		04.02.10	

DEPT		SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	ITEM NO	No OF ITEMS
PP		NTS	400.000	F-31		
CODE 121						

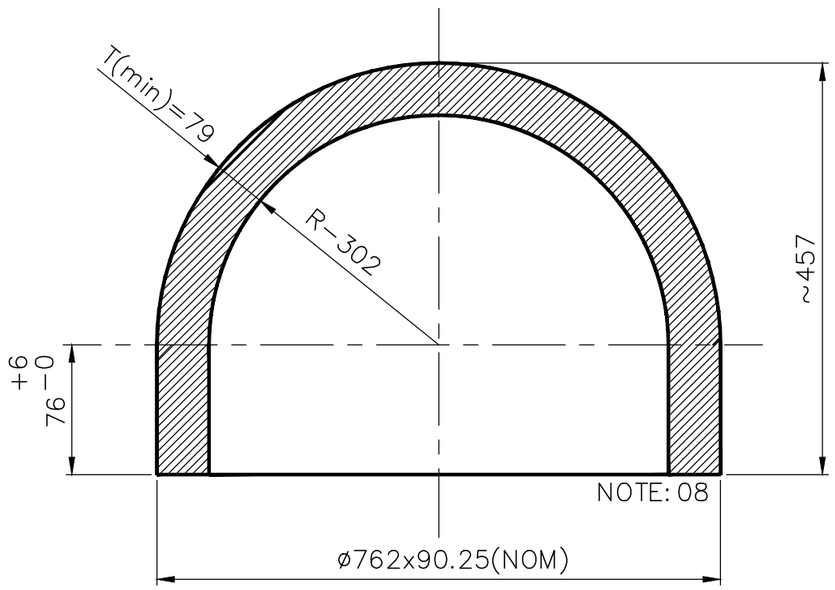
TITLE: HEMISPHERICAL END COVER RAW FORMING D660x81.25(NOM)

CARD CODE: U 01

DRAWING NO : 3-04-321-02705 REV 01

DRAWING NO: 3-04-323-02706

ALL DIMENSIONS ARE IN MM
FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER RELEVANT QCP / QP



NOTES:

01. DESIGN MANUFACTURE AND INSPECTION AS PER IBR.
02. FOR TOLERANCES REFER STD.DRG.NO: 4-03-000-00053.
03. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
04. NORMALISING AND TEMPERING IS TO BE DONE AFTER HOT FORMING.
05. NO THICKNESS GREATER THAN 152.4mm SHALL BE USED WITHOUT PRIOR BHEL APPROVAL.
06. FITTING SPECIFICATION : SA234 WP91

△01

08. THE FORMED HEMISPHERICAL END COVER SHALL BE SUPPLIED WITH PLAIN END.

FITTING MATERIAL CODE: 920841940000

VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C	UNIT	UNIT WEIGHT	GS
		HS END COVER				SA 234 WP.91	A		500.000	
					VAR NO	MATERIAL SPECN		D1	QUANTITY	

REV	DATE	ALTERED :K.S.
01	31.07.12	CHD & APPD: RAJA.K.
ZONE	NOTE -7 DELETED.	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI – 620014

	NAME	SIGNATURE	DATE	NO. OF VAR
DRN	K.S		03.02.10	
CHD	I.K.S		04.02.10	
APPD	I.K.S		04.02.10	

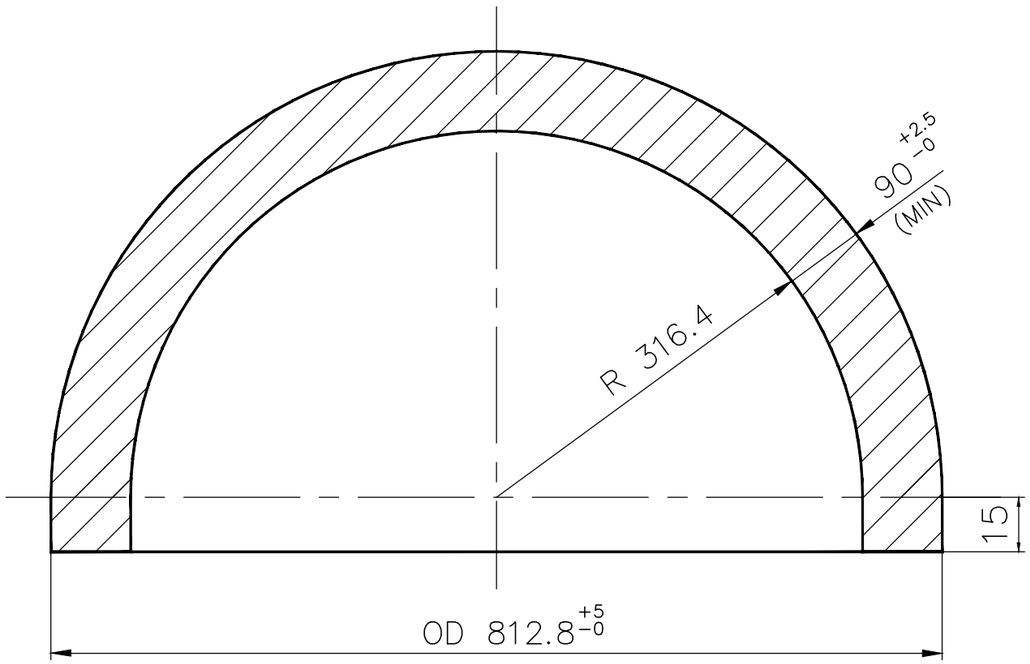
DEPT		SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	ITEM NO	No OF ITEMS
PP		NTS	500.00	F-33		
CODE 121						

TITLE: HEMISPHERICAL END COVER RAW FORMING D762X90.25(NOM)

CARD CODE: U 01

DRAWING NO : 3-04-323-02706 REV 01

DRAWING NO: 3-07-125-11249



NOTES:

01. DESIGN MANUFACTURE AND INSPECTION AS PER IBR.
02. NORMALISING AND TEMPERING ARE TO BE DONE AFTER HOT FORMING.
03. THE RAW PLATE MATERIAL, BEFORE PURCHASE, SHALL BE HOT TENSILE TESTED AT A TEMPERATURE OF 446.1 °C.
04. FITTING SPECIFICATION : SA 234 WP12 Cl1
05. RAW MATERIAL SPECIFICATION : SA 387 Gr12 Cl2
06. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI – 620014
355–055

	NAME	SIGNATURE	DATE
DRN	ISMAIL		01.12.14
CHD	RAJA.K		02.12.14
APPD	RT		03.12.14

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
PP			NTS	1200.000	
CODE 121					

TITLE
CONNECTING SPHERE
D812.8x90 (MIN)

DRAWING NO : 3–07–125–11249 REV 00

Revision record:
Rev: 00: Supersedes TDC: 5:019 & can be used wherever the old TDC is specified.
Rev: 01: New materials, IGCsT added. UT, Hardness requirement modified. LPI, MPI requirement added.
Rev: 02: Flatness requirement added in clause no: 5.0
Rev: 03: TDC for, Pipe Fittings for NTPC contracts (TDC 0 427), Pipe fittings indigenous supply(TDC 0 422) has been merged with this TDC and named as Butt Welded formed pipe fittings. Cl. 2.0 General removed, scope limited to IBR only and other clauses renumbered. Limits of carbon modified. Aligned with NTPC requirements.
Rev: 04: Restriction in size below 2 in. removed based on Spares requirement.
Rev: 05: Cl: 2.0, 3.0, Revised.
Rev: 06: Product Heading changed. Cl 1.0 Scope and Raw material Sourcing added. Cl.2.0 & 3.0 merged and totally revised. Cl. 4.0, 5.0, 6.0 modified and renumbered.
Rev: 07: Cl 1.0, 2.0 & 5.0 Modified for SS material.

1.0 MATERIAL SPECIFICATION:

SCOPE		
Fittings	:	Made by welding are prohibited.
ASME(Latest as on the Date of PO)	:	Carbon Steel (CS), Alloy Steel(AS): SA 234, Stainless Steel(SS): SA 403[g]
Additional Requirement	:	As listed below (supplementary to Specification)
Size Grade & Qty.	:	As per Purchase order (PO) / Drawing
Indigenous -		
Raw material for Alloy Steel & Stainless Steel	:	Shall be procurred from IBR approved "Creep resistance steel makers"

2.0 MANUFACTURING & TESTING REQUIREMENTS:

2.1 Machined Fittings (Max size permitted 4") – Reducers, Couplings & End caps

Starting material Rolled or Forged Bars, Killed steel	Heat treatment	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed
	NDE – UT[d]	To be done after Heat treatment. For size above 50mm – to be done as per ASTM A 388 Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4
Finished fitting (after machining)	HT	Not required
	NDE (for all sizes)	• MT (100%)- Procedure - As per ASTM E709. No linear indications are acceptable For WP91 Wet MPI shall be done • LPI – **SS**: Shall be done as per ASTM E165. No linear indications are acceptable. • **SS:** Finished fittings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure at 5cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.
	Hardness	Base material Hardness for WP5 - 217 BHN max. WPB, WPC, WP11, WP12, WP22 – 197 BHN max. WP91 - 191-241 BHN – 100% to be checked
	Dimension	ASME B16.9 & ASME B16.11, As per Engineering Drawing
	Bend Test (for IBR items)	Specimen: 19mm. Thickness (t) x 25.4mm width - cold bent 180 deg. over thin section without fracture, mandrel radius: CS :<=6.35 mm. AS, SS : <=1.5 times specimen thick.

2.2 Seamless Formed Fittings – Ells, Tees, Reducers, End cover (Dished end)

<table>
<tr><td>Starting material:</td><td></td><td></td></tr>
<tr><td>1)Tube & Pipe</td><td>NDE – UT[d]</td><td>Shall be done as per - ASTM E 213 with longitudinal notch of 5% wall thickness with max.1.5mm and min. 0.3mm. Actual measured notch depth to be specified in Test Certificate.</td></tr>
<tr><td>2)Forged blank (For end covers)</td><td>NDE – UT[d]</td><td>For size above 50mm
UT shall be done as per - ASTM A 388
In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4</td></tr>
<tr><td>3) Plate</td><td>NDE – UT[d]</td><td>For size above 10mm
SA 578, Acceptance Level - B</td></tr>
<tr><td rowspan="7">Finished fitting (cold/hot forming)</td><td>Heat treatment after forming</td><td>Shall be done as per SA234/SA403.
When Heat Treatment is required it shall be done as per the below table values:
Stainless Steel: All grades - Solution Annealed: 1050-1100 Deg C
Soaking time : ½ hr per inch with minimum 15 minutes
<table>
<tr><td rowspan="2">Material</td><td colspan="2">Heat Treatment Temp,C</td><td colspan="2">Soaking time, hr/in</td></tr>
<tr><td>Normalising</td><td>Tempering</td><td>Normalising</td><td>Tempering</td></tr>
<tr><td>CS- WPB & WPC</td><td>870-900</td><td>-</td><td>1/2</td><td>-</td></tr>
<tr><td>AS–WP11, WP12</td><td>920-950</td><td>655+- 15</td><td>1/2</td><td>1</td></tr>
<tr><td>AS–WP5, WP22</td><td>920-950</td><td>695+- 15</td><td>1/2</td><td>1</td></tr>
<tr><td>AS- WP91</td><td>1040-1080</td><td>746-774</td><td>1/2</td><td>1</td></tr>
</table>
Note
1.Normalising shall be done for a minimum time of 30 min while tempering to be done for a minimum time of 60 min.</td></tr>
<tr><td>NDE (for all sizes) – Except for Pl. formed D.end</td><td>• MT (100%) - Shall be as per - ASTM E709 No linear indications are acceptable. For WP91 Wet MPI shall be done.
• LPI – SS: Shall be done as per ASTM E165. No linear indications are acceptable.
• SS: Finished fittings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure at 5cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.</td></tr>
<tr><td>NDE–for Plate formed D.end</td><td>For Plate Formed D.End – 100% MT as per - ASTM E709 on both inner and outer surfaces of Knuckle radius and weld ends. No linear indications are acceptable.</td></tr>
<tr><td rowspan="3">NDE – UT[d] For OD > or=219mm & W.T >or= 6mm</td><td>If made from Pipe & Tube –
Shall be done as per - ASTM E 213 with longitudinal notch of 5% wall thickness with max.1.5mm and min. 0.3mm. Actual measured notch depth to be specified in Test Certificate.</td></tr>
<tr><td>If made from Forging Shall be as per - ASTM A 388
In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4</td></tr>
<tr><td>If made form Plate shall be as per A578 Level-B</td></tr>
<tr><td>Hardness</td><td>Base material Hardness for
WP5 – 217 BHN max.
WPB, WPC, WP11, WP12, WP22 – 197 BHN max.
WP91 - 191-241 BHN – 100% to be checked</td></tr>
<tr><td>Dimension</td><td>ASME B16.9 & ASME B16.11, As per Engineering drawing.</td></tr>
<tr><td>Bend Test (if starting material is forged blank) (for IBR items)</td><td>Specimen : 25.4 mm x 19 mm thick - cold bent 180 deg. over thin section without fracture, internal radius of bend: CS :<=6.35 mm.
AS, SS: <=1.5 times specimen thick.</td></tr>
</table>

2.3 Forged Fittings – Ells, Tees, Reducers, Couplings, and Flanges & End cover (Dished End)

Shall be forged to the shape with a minimum forge reduction ratio of 1:4. Fitting shall not be machined from a forged block.

<table>
<tr><td>Starting material:
Rolled or forged Bars, blooms, billets and Killed steel</td><td>NDE – UT[d]</td><td>To be done for diameter or thickness above 50mm
Procedure - As per ASTM A388
In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4</td></tr>
<tr><td>After forging (cold/hot forging)</td><td>Heat treatment</td><td>Shall be done as per SA234/SA403.
When Heat Treatment is required it shall be done as per the below table values:
<table>
<tr><th rowspan="2">Material</th><th colspan="2">Heat Treatment Temp,C</th><th colspan="2">Soaking time, hr/in</th></tr>
<tr><th>Normalising</th><th>Tempering</th><th>Normalising</th><th>Tempering</th></tr>
<tr><td>CS- WPB & WPC</td><td>870-900</td><td>-</td><td>1/2</td><td>-</td></tr>
<tr><td>AS–WP11, WP12</td><td>920-950</td><td>655+- 15</td><td>1/2</td><td>1</td></tr>
<tr><td>AS–WP5, WP22</td><td>920-950</td><td>695+- 15</td><td>1/2</td><td>1</td></tr>
<tr><td>AS-WP91</td><td>1040-1080</td><td>746-774</td><td>1/2</td><td>1</td></tr>
</table>
Stainless Steel: All grades - Solution Annealed: 1050-1100 Deg C Soaking time: ½ hr per inch with minimum 15 minutes.
Note
1.Normalising shall be done for a minimum time of 30 min while tempering to be done for a minimum time of 60 min.</td></tr>
<tr><td rowspan="5">Finished fitting</td><td>NDE – UT[d] For OD > or = 219mm</td><td>UT shall be done as per - ASTM A388
In Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4</td></tr>
<tr><td>NDE (for all sizes)</td><td>• MT-(100%) Shall be done as per ASTM E709.
No linear indications are acceptable.
For WP91 Wet MPI shall be done.
• LPI – SS: Shall be done as per ASTM E165. No linear indications are acceptable.
• SS: Finished fittings shall be checked for radioactive contamination and reported.
Survey meter shall be used to measure at 5cm near the surface.
Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.</td></tr>
<tr><td>Hardness</td><td>Base material Hardness for
WP5 & WP9 – 217 BHN max.
WPB, WPC, WP11, WP12, WP22 – 197 BHN max.
WP91 - 191-241 BHN – 100% to be checked</td></tr>
<tr><td>Dimension</td><td>ASME B16.5 & ASME B16.11, As per engineering drawing.</td></tr>
<tr><td>Bend Test (for IBR items)</td><td>Specimen: 19mm. Thickness (t) x 25.4mm width - cold bent 180 deg. over thin section without fracture, mandrel radius: CS :<=6.35 mm.
AS, SS : <=1.5 times specimen thick.</td></tr>
</table>

General requirements:

a. Product analysis as per S50 of ASTM A960 is required.
b. Carbon < or = 0.25% for WPB (all thickness) and WPC (thickness < or = 20mm)
c. Carbon < or = 0.30% for WPC (thickness > 20mm)
d. If UT not done on the starting material, the same shall be done by the fitting manufactures before forming / fabrication.
e. Mechanical Testing – Test samples shall be tested in the Heat treatment of fitting delivered condition
f. Pipe made from plate as a starting material and long seam welded should not be used.
g. All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity. (Applicable for SS material only)

3.0 REPAIRS AND FINISH:

The products shall be free from injurious defects like crack,seam etc. with workman like finish. Repairs involving fusion welding is prohibited. Surface defects can be removed by mechanical means and the defective areas shall be merged with adjacent surface. Minimum thickness after repair shall meet the drawing / specification requirements. Flatness on curved surfaces of fittings shall be limited to 6% of nominal OD. Thickness : Outer Diameter and Transition : Variation shall be merged smooth to min 1:4 taper.

4.0 MARKING, PRESERVATION AND PACKING:

The following details to be neccessarily hot stamped 1. Heat number, 2. Inspecting Authority Seal 3. Specification Grade and Size, 4. Company Seal and "B16"(for ANSI fittings).
The rest to be marked as per Specification.
Adittionally The following to be painted :
for OD > 108mm : PO No., Sl. No., Specification ,"BHEL-Tiruchirappalli", Drawing.No. & Weight
for OD <= 108mm : Sl. No., Specification
CS & AS fittings to be rust preventive coated after shot blasting inside & out side & packed to avoid damage.
SS fittings to be surface treated (Pickling, Passivation) as per ASTM A380 both inside and outside.

5.0 INSPECTION AND CERTIFICATION:

a. Products must be inspected at works and the test certificates must be countersigned by the Inspecting Authority as indicated below:
Imported items: Inspecting Authority approved by IBR for the country of origin. (to be concurred by BHEL before PO) with Form III-C as per IBR and MTC as given below.
Indigenously supplied IBR items:
a) Boiler Inspectorate/Directorate of Boilers of respective State if supplier is not approved under IBR with Form III-C as per IBR and Manufacturers Test certificate as given below.
b) Form III-C as per IBR certified by the Manufacturer if approved under IBR and Manufacturers Test certificate (MTC) as given below.
Indigenously supplied non IBR items: Manufacturers Test certificate as given below.

1. Purchase Order No.(BHEL),TDC No. & Test certificate number
2. Specification, Grade with applicable year of code, Heat Number, Drawing No.,Quantity & Size
3. Supplier of the steel used in making the finished product
4. Forming process, Chemistry including incidental elements - Heat wise.
5. Heat treatment details: temperature, soaking time, cooling medium (for quenching).
6. Mechanical test results, Hardness, NDE test results with reference & acceptance standard.
7. Detailed NDE reports for MT, LPI and UT shall be submitted along with MTC.
8. Micro for WP91 in final Heat treated condition of fittings.
9. PMI certification for all Alloy steels fittings.
10. Print of the stamp of Inspecting Authority, which is used in the fitting.
11. Dimensional reports for each product
12. Repair details if any.
13. Certified copy of TC for starting material.
14. Guarantee certificate for retainability of hydrostatic test pressure corresponding to that of matching pipe of equivalent material or Hydro static test report as applicable.

b. For CE-marking items the TCs with details specified above shall be submitted as per EN-10204 (latest)

1. For pressure parts test certificates of type 3.1 or 3.2 is acceptable.
Type 3.1 – Suppliers shall have ISO 9001 certification certified by Notified Body recognized by European community and test certificate certified by suppliers authorized inspection representative.
Type 3.2 – Components inspected and test certificates certified by Notified Body recognized by European community.
2. For non pressure parts test certificates of type 2.2 is acceptable.
Type 2.2 – suppliers test certificates signed by suppliers authorized inspection representative with test results as required by TDC.

c. For SS: Measured Radioactivity levels at 5cm from the surface of the fitting shall be reported in the Mill Test Certificate. (Not to be recorded in IBR Form)

C.Haritha	V.Kalyanaraman	Selvarajan.S	V.Ravikumar
Prepared By	Reviewed by		Approved By

Revision record: Rev 00 14/03/11: Fresh issue
Rev 01 03/04/11: Cl 1: CS grade modified in line with drawing, TDC for Alloy steel starting material clarified, Cl 2, 3, 4, 5: the term 'plates' modified by 'coupon/ plates', Cl 5: High temperature test values modified in line with ASME Sec II 2011a Addenda, Cl 10: Certification modified in line with SA234 Cl 17.
Rev 02: 03/04/13: Date of revision corrected – typographical error.
Rev 03: 01/12/14 – Cl 1 – Raw material TDC numbers removed and requirements added. CL.3,4 Temperature modified. Cl 5 – High temperature tensile test for AS modified. Bend test added. CL.7 Circularity tolerance added.

1. **MATERIAL SPECIFICATION:**
ASME (Latest as on PO Date): Carbon Steel (CS): SA299, Alloy Steel (AS): SA 234 WP12 CL.1
Additional Requirement:
Raw Material: SA299 (CS), SA 387 Gr 12 Cl 2 (AS) - All plates are of Fully Killed steel. Plates shall be of Vacuum Degassed (S1 of SA20).
Final rolling: lengthwise. Plate thickness (t) > 80mm to be made only from ingots. Plate of t </= 80mm, can be made from continuous cast slabs. Reduction ratio in thickness from slab/ingot to plate shall be 3:1. Sufficient 'Top of Ingot' to be discarded to ensure plates are free of segregation. After top discard the increase in Carbon content at the top-mid, width-mid thickness of the plate shall not exceed 20% of the reported ladle analysis value. This value shall be reported in Test Certificate.
Ladle analysis: 1 sample per cast, Product analysis: min.1 sample per plate as rolled. For CS - Max. Carbon: 0.28%, Max. Al: 0.05%, Carbon Equivalent for Carbon Steel: As per S20 of SA20.
CS: plates shall be Normalized, AS: Plates shall be normalized and tempered. UT as per SA578 with acceptance criterion Level B. Final certification in IBR Form IV, duly signed by IBR approved Inspection authority for that region/Boiler directorate (If not well known plate maker).
Material, Size and Qty: As per Purchase order (PO) / Drawing

2. **FORMING:**
Process: Hot Forming with Dies and tools clean of loose scale and sheet particles. The process details and drawing shall be submitted to BHEL for approval. Test coupon/plate: For each Product: size: 300mm X 300mm. (or, use extra portion of skirt). The test coupon/plate to accompany the product during all stages of heating and heat treatments of the product.

3. **POST FORMING HEAT TREATMENT (HT):** along with test coupon/plates after hot forming
Carbon Steel (CS): Normalize at 870-900°C, 0.5 hr. /inch, Air cool.
Alloy Steel (AS): Normalize at 920-950°C, 0.5 hr/inch, Air cool & tempering at 650-680°C.,1hr/inch of thk.

4. **SIMULATION HEAT TREATMENT for test coupon/plates:**
For Carbon Steel: Stress Relieving at 615+/-10 deg.C, 3 hr./inch t, furnace cool to 400 deg.C.
For Alloy Steel : Stress Relieving at 665+/-15 deg.C, 3 hr./inch t, furnace cool to 400 deg.C.
Rate of heating /Rate of cooling: < 220 / t deg.C/hr (t in inch), but need not be slower than 55 deg.C/hr.

5. **MECHANICAL TESTS:** on Simulated Heat Treated test coupon/plates
Extent of test: One Per size/ per heat/ per HT batch.
Orientation of Specimen :Transverse to rolling direction.
(1)Tensile test: As per the specification (2) Hardness(max.):197 BHN
(3) High temperature tensile test as per S7 of SA20 – **CS:** Yield strength at 400°C: 19.10Kg/Sq.mm (Min).
AS: Yield strength at 500°C: 15.0 Kg/Sq.mm (Min)
(4)Bend Test: Angle of Bend: 180 Deg. Diameter of the mandrel: CS: 3 X Thickness of the Plate as rolled
AS: 2 x Thickness of the plate as rolled

6. **NON DESTRUCTIVE TEST:**
MPI: Both inside and outside surface of the Dished ends as per Appendix - 6 of ASME Sec.VIII Div.I.

7. **DIMENSIONAL TEST:**
Dimensions and Tolerances: As per the Drawing indicated in the Purchase Order.
Circularity: Difference between the Max. and Min. Inside diameter at skirt portion shall not exceed 1% of nominal diameter.
Profile Departure: The inner surface of the dished ends shall not deviate outwards from the specified shape by more than 1.25% of the Nominal inside Diameter and inwards by 5/8 % of nominal inside diameter specified. This shall be measured using a profile gauge having length not less than 1/4th of the internal Diameter of the Dished End.

8. FINISH AND REPAIRS:

The products shall be free from injurious defects and shall have a workman like finish. Repairs involving fusion welding is prohibited. Surface defects can be removed by mechanical means and the defective areas shall be merged with adjacent surface. Minimum thickness after merging shall meet the drawing / Specification requirements. Details shall be recorded.

9. MARKING, PRESERVATION AND PACKING:

Details to be stamped with low stress stamps sufficiently away from the knuckle radius on the Outside surface of each product.

1. Specification and grade **2.**Melt number **3.**Maker's emblem/code **4.**Inspecting Authority's seal.

Details to be painted on the product: PO No., "BHEL-Tiruchirappalli", Drawing. No. & Weight. Products to be applied with 1 coat rust preventive & dispatched suitably to avoid damage in transit.

10. INSPECTION AND CERTIFICATION:

Products must be inspected at works by the Inspecting Authority approved by Indian Boiler Regulation. Test certificate (In English only) for each product as per IBR form III-C countersigned by the Inspecting Authority with the following details shall accompanied.

1. Purchase Order No. (BHEL), TDC No. & Test certificate number, Specification and Grade with applicable Year of code
2. Copy of the raw material Test Certificate
3. Quantity & Drawing No, Heat Number, Forming process, Seamless or welded.
4. Chemistry including incidental elements - Ladle and Product analysis. When the amount of an element is less than 0.02% the analysis for that element may also be reported.
5. HT details of material & test coupons: temperature, soaking time, ROH/ROC, medium etc.
6. Mechanical test results, Hardness including High temperature test results. Detailed NDE test results with reference & acceptance standard.
7. Print of the stamp of Inspecting Officer, which is used on the plate.
8. Repair details, if any, Dimensional reports for each product.
9. In the MTC a clause for certificate of compliance shall be added stating that – "The fitting was manufactured, sample tested and inspected in accordance with the specification and was found to meet the requirements."

11. AUDIT CHECKS AT BHEL :

BHEL reserves the right to reject any item found to be not meeting the requirements during check tests, or during subsequent processing at BHEL.

	6/12/14	6/12/14	6/12/14	
Haritha.C/QA	Kalyanaraman.V/QA	Selvarajan.S/QA	Jayaraman.T/ MM	Revisankaran.U/QA
Prepared by	**Reviewed by**			**Approved by**

BHARAT HEAVY ELECTRICALS LIMITED
MM / PURCHASE - C&F
BHEL, Trichy – 620014

Annexure II

Enquiry Terms and Conditions

Note: This annexure has to be mandatorily filled in and signed by the manufacturer (or) mill and submitted along with Technical bid

S.No.	BHEL Requirements	Supplier Comments (Acceptance or otherwise for each point to be given)
1	**Material Specification:** Supply of Hemispherical Dished Ends shall be strictly as per the material specification mentioned against each item of the enquiry.	
2	**Technical Conditions:** 1. Supply of Hemispherical Dished Ends shall be strictly as per drawings mentioned against each item of the enquiry. 2. Supply shall be as per TDC 423/07 & TDC432/03. 3. Inspection by authorized inspection agency attached (Annexure 2). 4. TC in FORM IIIC, works TC, Raw Material TC, UT report, MPI report and other test certificates as called in TDC 423/07 & TDC432/03 shall be sent along with supply.	
3	**Payment Term (Indigenous)** 1. Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials. **Any deviation in the above payment term will attract loading as mentioned below.** **"Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.** 2. Offers of indigenous Suppliers with payment terms as LC / Advance Payment / Payment through bank are liable for rejection.	
4	**Payment Term (Imports)** 1. BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account. **Any deviation in the above payment term will attract loading as mentioned below.** **"Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.**	

	2. In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value. 3. For LC at sight the loading will be considered @ 3.5% on the offered Value.	

	4. Incase of LC, LC will be opened only on intimation of readiness of material for shipment. LC will not be opened prior to readiness of materials. 5. Normally CAD at sight and Confirmed LCs are liable for rejection. However, if CAD at sight is accepted by BHEL, a loading of 5% will be done on the offered Value.	
5	**Liquidated Damages / Penalty** 1. For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value. 2. **Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).** 3. If LD is not accepted on total order value a loading of 10% on the offered value will be done. 4. For FOB contract LD will be calculated form the date of TPI signature. 5. For CFR contracts LD will be calculated from the date of B/L.	
6	**Bank Guarantee / Warrantee**: a) The Bidder, in the event of an order, should furnish a bank Guarantee from BHEL's consortium banks (List attached) or counter-guaranty by vendor's bank to BHEL's consortium banks, at no extra cost to BHEL, in a proforma prescribed by BHEL, provided along with the order, for an amount equivalent to 10% (Ten percent) of the value of the contract. The BG shall be valid for period of 18 months from the date of last shipment or 12 months from the date of receipt / acceptance / at BHEL, TRICHY whichever is later, with a claim period of two months. b) Supplier to accept guarantee/warrantee of "18 months from dispatch or 12 months from commissioning, whichever is earlier". Any deviation to this may lead to rejection of the offer.	
7	**Risk Purchase:** BHEL at its option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute thereof. The supplier shall be liable for any loss which BHEL may sustain by reason of such risk purchases in addition to LD at the maximum rate mentioned in the LD clause above.	
8	**BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.**	

9	**Fixed Price**: Prices quoted by the bidder shall be fixed and not subject to any escalation whatsoever during the period of bid validity and execution of the Purchase Order. A bid submitted with an adjustable price will be liable for rejection. Prices shall be written in words and figures. In the event of any discrepancy with regard to total price and unit price whichever is less shall be considered correct. Unit rates quoted should include all the charges like third party inspection charges, packing & Forwarding etc. If the charges are shown separately, the same shall be in % of basic unit rate. No Lump sum charges shall be quoted.	
10	**Bid Currency**: 1. Indian bidders should submit the prices only in Indian Rupees. Foreign bidders may submit their bid in their preferred currency. 2. **For evaluation, Exchange rate (TT selling Rate of SBI) as on TechnoCommercial bid opening date shall be considered.**	

	3. **Delivery Conditions:** **a) For Indigenous bidders - Ex-works offers will not be considered**. Bidders should submit their offer on FOR Destination, BHEL Stores, Trichy basis. The quote shall include all charges, including testing, packing, inspection, freight and insurance charges, etc. **A. Imports:** **b)** Bidders should submit their offer for net FOB (nearest port) and CFR, Chennai with freight break up details. BHEL reserves the right to order on FOB or CFR basis. If FOB rates are not indicated, offer may be liable for rejection. **FOR CFR INCO TERMS** **c)** In the case of CFR terms, the following points are to be addressed in the offer: 1. **Shipment Mode: Break Bulk (or) Container (To be specified clearly**). 2. The freight charges quoted should be on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost. **d)** In case of shipment through Containers on CFR basis, the BL should bear the endorsement that "14 free days for Container Detention is applicable". **FOR FOB INCO TERMS** **e)** The available load ports for FCL (Full Container Load) Cargo in Freighting Contract are Antwerp, Hamburg, Genoa, Rotterdam, Bilbao, Gothenberg, Felixstowe, St.Petersberg, Busan, Dalian, Shanghai, Kobe, Osaka, Yokohama.	

	f) The available load ports for LCL (Less than Container Load) Cargo in Freighting Contract are Antwerp, Hamburg, Genoa, Rotterdam, Bilbao, Gothenberg, Felixstowe, Thamesport, Tilbury, Le Harve, St.Petersberg, Busan, Masan, Dalian, Shanghai, Tianjin, Kobe, Osaka, Yokohama, Singapore, Durban, **g)** In case if the suppliers are unable to execute through the above ports with the available types of cargo loading (Reasons for the same to be mentioned), FOB rate along with ocean freight* (LILO basis) applicable up to Chennai to be quoted. **h)** For FOB contract delivery period mentioned shall be the date of TPI signature.	
11	**Validity:** 1. **The offers shall be kept open for acceptance for 90 days from the date of Tender opening. Once the tenders are submitted, rates cannot be changed on any grounds.** 2. BHEL reserves the right to negotiate L1 rate or re float the tender opened if L1 price is not the lowest acceptable price to them inter-alia other reasons. 3. Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted in by purchaser will not be applicable to the contract.	
12	1. Please submit your offer in TWO part bid (technical cum commercial bid in one cover and price bid in another cover) in single cover. The Covers should be duly super scribed with the ENQUIRY NO and DUE DATE in BOLD letter without fail.	
13	**BHEL Fraud Prevention Policy:** The Bidder along with its associate/collaborators/sub-contractors/sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice. Fraud Prevention policy and list of Nodal Officers are hosted on BHEL website, vendor portals of units/Region intranet	

14	1.Bidders shall submit the OFFER in English language (a single envelope containing two inner envelopes) as indicated below: Envelope 1: This sealed envelope should contain (a) technical bid (b) un-priced commercial bid (copy of the Priced Bid without the price details) This envelope should be clearly marked "Part I – Technical and Un-priced commercial bid, indicating Enquiry No., Due Date, Address & Reference of the Bidder. Envelope II: This sealed envelope should contain price details. This envelope should be clearly marked "Part II - Price bid", indicating Enquiry No., Due Date, Address & Reference of the Bidder. 2. The OFFER, sealed and Super scribed as "Parts I & II inside" indicating Enquiry No., Due Date, Address & Reference of the Bidder should reach this office on or before the due date by 14:00 Hrs (IST). OFFERS RECEIVED AFTER 14:00 Hrs (IST) WILL NOT BE CONSIDERED FOR EVALUATION. The OFFER to be addressed to: **The Tender Opening Cell/MM** **Room No-26 , Building – 24 , Ground Floor** **Bharat Heavy Electrical Limited** **Tiruchirapalli- 620014.** Note: Bidders are requested to submit their offers only through sealed bids. 3. Bidders may submit their bids through email/fax etc. 4. Tenders should be free from CORRECTION AND ERASURES, Corrections if any, must be attested. A. If, in the price structure quoted for the required goods, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly. B. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected. C. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (A) and (B) above. 5. **Offers from Stockists, traders will not be acceptable.** 6. BHEL prefers the manufacturers to quote directly. In case this is not possible and the offer is being submitted by an Indian agent, the following details are to be furnished along with the offer: a. The letter from their Principal authorising the Indian agent to submit the offer on their Principal's behalf. In case the Indian agent submits offer on their own letter head then a covering letter (in original) from the Principal should be enclosed, clearly mentioning that they are bound by the offer submitted by the Indian agent on their behalf.	

b. Precise relationship between foreign suppliers and their Indian agents and their mutual interest in business, should be clearly spelt out.

c. Any payment, which the agent receives in India or abroad, from the foreign supplier, whether as a commission or as a general retainer fee is to be mentioned in the offer.

d. All services to be rendered by the agent, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier and the Indian agent.

e. The amount of agency commission agreed to between the foreign principal and the Indian agent should be specifically disclosed and the agency commission will be paid in Indian Rupees only on satisfactory completion of the contract.

f. Copy of current agency agreement is to be enclosed without which the offer is liable for rejection.

The correspondence between the bidder and BHEL through email is considered to be valid document legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties.

Bidders participating in the tender should declare in their technical bid whether they have been black-listed / kept on hold / given Business holiday for a specified period by any Public Sector Undertaking or Government Departments. The reasons for such action with details and the current status of such hold shall be clearly furnished to BHEL. If no such details are mentioned in the offer, it will be construed that the bidder is not under any such hold. However, at a later date if it comes to the notice of BHEL about any such hold under enforcement, BHEL reserves the right to reject the offer at any point of time and also under any stage of the finalisation of the tender. Such bidders will not be permitted to participate in the further tender proceedings and will be communicated suitably.

7. BIDDERS WHO ARE NOT REGISTERED VENDOR OF BHEL TRICHY HAVE TO
SUBMIT THE FILLED IN SUPPLIER REGISTRATION FORMS (SRF) AVAILABLE IN THE BHEL WEBSITE - www.bhel.com AND THE OTHER REQUIRED DOCUMENTS
CALLED FOR IN THE SRF (INCLUDING D&B REPORTS FOR IMPORT VENDORS. ALONG WITH THE TECHNICAL BID WITHOUT FAIL. The same shall be scrutinized as per BHEL evaluation procedures

8. ALL VENDORS (BHEL REGISTERED VENDORS OR NEW VENDORS) SHOULD
SUBMIT AN EXPERIENCE CERTIFICATE DETAILING THE QUANTITY SUPPLIED
SPEC WISE YEAR WISE ALONG WITH THE UNPRICED PO COPIES AND PROOF OF
SUPPLY (SUCH AS INVOICE & BILL OF LADING COPIES) ALONG WITH THE OFFER FOR / TENDERED SPECIFICATIONS AND TEST
CERTIFICATES FOR THE SAME; FOR OFFER ACCEPTANCE. THE

MANUFACTURER SHALL HAVE MANUFACTURED / TENDERED SPEC AND THE SAME SHALL HAVE BEEN SUPPLIED/IN USE/OPERATION.

9. ALL VENDORS (BHEL REGISTERED VENDORS OR NEW VENDORS) SHALL SUBMIT - THE FACILITIES AVAILABLE AT THE MILL - STARTING MATERIAL TO FINISHED PRODUCT, MANUFACURING QUALITY PLAN, INSPECTION & TEST PLAN TO MEET THE TDC REQUIREMENTS (product form wise) ALONG WITH THE TECHNICAL BID SHOULD BE SUBMITED WITHOUT FAIL.

The same shall be scrutinized as per BHEL evaluation procedures.

OFFERS SUBMITTED WITHOUT THIS WILL BE REJECTED.

10. If supplier is not a steel maker then source & form of raw material for the manufacturing shall be submitted product form wise.

11. The manufacturer shall submit filled in forging supplier facility report. Suppliers without basic manufacturing facilities in house, shall not be considered for evaluation.

12. In house test facilities for mechanical, chemical & non - destructive testing are mandatory requirements for consideration of this offer.

13. BHEL/End customer reserve the right to inspect the item ordered at any stage at vendor's works and if found not to meet the stipulated conditions, material is liable for rejection.

14. Acceptance of TC by BHEL before dispatch is must.

15. Date of price bid opening will be informed later after acceptance of offer on technical ground.

16. Bidders are to confirm all the above points in their "Technical and unpriced commercial bid". Incomplete offers will not be considered. The technical documents submitted for consideration of offer (shall be in English) is to be signed and sealed in original by mill without fail.

17. Suppliers have to submit their registration forms online in BHEL portal (www.bhel.com). The hard copy of the supplier registration form (17 pages) and checklist (1 page)with signatory on all the pages shall be courier to the below mentioned address:

Mr. EBINESAN,
DGM/SDC/MM,
24 Bldg, IV Floor,
BHEL, Trichy-620014.
Phone- 0431-2577448
e-mail- ebi@bheltry.co.in

Fax : 011-2306 2626

संख्या /No. 20/29/2009 -Boilers
भारत सरकार
वाणिज्य और उद्योग मंत्रालय
(औद्योगिक नीति एवं संवर्धन विभाग)
उद्योग भवन, नई दिल्ली - 110107
GOVERNMENT OF INDIA
MINISTRY OF COMMERCE AND INDUSTRY
(DEPTT. OF INDUSTRIAL POLICY & PROMOTION)
UDYOG BHAWAN, NEW DELHI-110107,
दिनांक/ **Dated, the 8th October , 2014**

To

1. All the members of the Central Boilers Board
2. All the Inspecting Authorities

Subject: List of recognised Inspecting/Competent Authorities, Well Known Steel Makers, Foundries/Forgings units, Tube/Pipe Makers, Material Testing Laboratories and Remnant Life Assessment Organizations under Indian Boiler Regulations as on 30th September, 2014.

Sir,

I am to forward herewith a copy each of the list of recognised Inspecting/Competent Authorities, Well Known Steel Makers, Foundries/Forgings units, Tube/Pipe Makers, Material Testing Laboratories and Remnant Life Assessment Organizations under Indian Boiler Regulations, 1950, as on 30th September, 2014 for your reference and record.

Thanking you,

Yours faithfully,

(S. K. Jain)
Development Officer &
Assistant Secretary, Central Boilers Board
Tel.No.011-23063166

(As on 30/09/2014)

INSPECTING AUTHORITIES

	NAME OF THE AUTHORITY	AREA OF OPERATION
1.	Director of Boilers, Andhra Pradesh	Andhra Pradesh
2.	Chief Inspector of Boilers, Arunachal Pradesh	Arunachal Pradesh
3.	Chief Inspector of Boilers Assam	Assam
4.	Chief Inspector of Boilers Bihar	Bihar
5.	Chief Inspector of Boilers Chhattisgarh	Chhattisgarh
6.	Chief Inspector of Boilers, Delhi	N.C.T.D.
7.	Chief Inspector of Boilers, Goa.	Goa
8.	Director of Boilers, Gujarat.	Gujarat, Daman & Diu and Dadra & Nagar Haveli
9.	Chief Inspector of Boilers, Haryana.	Haryana & Chandigarh
10.	Chief Inspector of Boilers, Himachal Pradesh.	Himachal Pradesh
11.	Chief Inspector of Boilers,, Jharkhand.	Jharkhand
12.	Director of Boilers, Karnataka.	Karnataka
13.	Director of Boilers, Kerala.	Kerala
14.	Director of Boilers, Madhya Pradesh.	Madhya Pradesh
15.	Director of Boilers, Maharashtra.	Maharashtra
16.	Chief Inspector of Boilers, Meghalaya	Meghalaya
17.	Chief Inspector of Boilers, Manipur	Manipur

18. Chief Inspector of Boilers, Mizoram	Mizoram
19. Chief Inspector of Boilers, Nagaland	Nagaland
20. Director of Boilers, Orissa	Orissa
21. Director of Boilers, Punjab	Punjab
22. Chief Inspector of Boilers, Labour Department, Government of Puducherry, Puducherry	Puducherry
23. Chief Inspector of Boilers, Rajasthan.	Rajasthan
24. Director of Boilers Tamil Nadu	Tamil Nadu
25. Director of Boilers Telangana	Telangana
26. Chief Inspector of Boilers, Tripura	Tripura
27. Director of Boilers, Uttar Pradesh	Uttar Pradesh
28. Chief Inspector of Boilers Uttarakhand	Uttarakhand
29. Chief Inspector of Boilers, West Bengal	West Bengal
30. M/s. Lloyd's Register Asia 63-64, Kalpataru Square, 6th Floor, Kondivita Lane, Off. Andheri-Kurla Road, Mumbai-400 059	Tamil Nadu, Maharashtra Karnataka, Gujarat, Haryana, Himachal Pradesh, Punjab, Andhra Pradesh, Telangana & Odisha
31. M/s Bureau Veritas (India) Private Limited, Marwah Centre, 6th Floor, Opp. Ansa Inds. Estate, K. Marwah Marg, Off. Saki-Vihar Road, Andheri (East), Mumbai-400 072	Chhattisgarh, Gujarat , Haryana , Madhya Pradesh, Maharashtra , Odisha , Tamil Nadu, Bihar, Jharkhand, Sikkim & West Bengal
32. M/s ABS Industrial Verification (India) Pvt. Limited, 10th Floor, Lakhani's Centrium, Sector-15, Plot No. 27, CBD Belapur (E), Navi Mumbai-400 614	Maharshtra, Odisha & West Bengal

33.	M/s TUV India Pvt. Limited (TUV Nord Group) 801, Raheja Plaza-1, L.B.S. Marg, Ghatkopar(W) Mumbai-400 086	Andhra Pradesh, Gujarat, Maharashtra, Himachal Pradesh, TamilNadu, Telangana & Karnataka
34.	M/s. TUV Nord Systems GmbH Co.KG. Langemarckstr 20 451141 Essen GERMANY.	Europe, Brazil, China, Korea and Thailand
35.	M/s RSA (Formerly Royal & Sun Alliance plc) 17 York Street, Manchester, M2 3RS, United Kingdom	Europe
36.	M/s. Japan Inspection Company Limited, No.10-7, 1-Chome, hatchobori, Chou-ku, Tokyo, 104-0032, Japan	All countries in Asia except India
37.	M/s. S.G.S. Korea Company Limited, Industrial Division, 647-2,Sinpyeong-dong, Saha-gu, Busan, KOREA (604-030).	Korea & Japan
38.	M/s Bureau Veritas, 67-71, Boulevard du Chateau, 92200 Neuilly-sur-Seine, FRANCE	All countries except India.
39.	M/s. Lloyds Register Verification Ltd., 71, Fenchurch Street, London EC 3M, U.K.	All countries except India.
~~40.~~	~~M/s. Velosi Certification Bureau Ltd.,~~ Unit 1 Woodside Business Park, Whitley Wood Lane, Reading, Berkshire,RG2 8LW United Kingdom	~~Europe, Middle East~~ Countries, China, Malaysia Singapore & USA
41.	M/s TUV Rheinland AG Am Grauen stein, D-51105 Koln, Germany	All countries except India
42.	M/s OOO "TekhnoLogicheskieEnergosistime" 1. Kalinia St. Belgorod, 308001 Russia	Russia, China, Ukraine, USA & Germany

43	M/s Engineering Bureau Franke International, 55, Amurskaya St., Dnepropetrovsk 49108, Ukraine	Ukraine, Russia, Belarus, China , Uzbekistan, Poland, Belgium, Romania, & Czech Republic
44.	M/s. ARISE Boiler Inspection & Insurance Company Risk Retention Group, Grand Bay 1, 7000 South Edgerton Road, Suite 100, Breeksville, OH 44141 USA	USA & Canada
45.	M/s Tata Projects Limited, Quality Service Division, 2nd Floor, Varun Towers-1, Begumpet, Hyderabad-500 016	All countries except India
46.	M/s TUV SUD Industrie Service GmbH, Wstendstr. 199, 80686 Munich, Germany	All countries except India
47.	M/s Germanischer Lloyd Industrial Services GmbH, Steinhoeft 9, 20459 Hamburg, Germany	All countries except India
48	M/s. TUV Thuringen e.V., Business Division Steam and Pressure Technology, Melchendorfer Str. 64, 99096 Erfurt, Germany	Europe
49.	M/s. SGS-CSTC Standards Technical Services Co. Ltd. 9th Building, No. 69, KangQiao Industrial Park, Block 1159, KangQiao East Road, Pudong District, Shanghai-201 319 China	China
50	M/s Intertek Inspection Services UK Limited (Formerly M/s Moody International Limited) Hayworthe House, Market Place, Haywards Heath, West Sussex, United Kingdom	All countries except India
51.	M/s ABSG Consulting Inc., 16855 Northchase Drive, Houston, TX 77060 United States of America	All countries except India

52. M/s. Hartford Steam Boiler Inspection and Insurance Company of Connecticut, One State Street, 8th Floor Hartford, CT 06141-0299 U.S.A.	All countries except India and China
53. M/s. Certification Engineers International Limited, D 101-106, First Floor, International Technology Centre, CBD Belapur Station Complex, Navi Mumbai-400 614	All countries in Europe, Middle East & China
54. M/s. Det Norske Veritas AS, Veritasveien 1, PO Box 300, N-1322, Hovik, Norway	Europe, South & North America and Asia (except India)

List of Consortium Bank			
	Nationalised Bank		**Nationalised Bank**
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		**Public Sector Banks**
3	Bank of Baroda	20	IDBI
4	Canara Bank		**Foreign bank**
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	The Royal Bank of Scotland N.V.
10	Punjab National Bank	26	J P Morgan
11	Punjab & Sindh Bank		**Private bank**
12	State Bank of India	27	Axis Bank
13	State Bank of Hyderabad	28	The Federal Bank Limited
14	Syndicate Bank	29	HDFC
15	State Bank of Travancore	30	Kotak Mahindra Bank
16	UCO Bank	31	ICICI
17	Union Bank of India	32	Indusind Bank
18	United Bank of India	33	Yes Bank

(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT AND THE EXPIRY DATE OF BG MUST BE AFTER 60 DAYS FROM THE DATE OF COMPLETION OF WARRANTY PERIOD)

PERFORMANCE BANK GUARANTEE

In accordance of M/s. Bharat Heavy Electricals Limited (A Government of India undertaking, a company incorporated under the Companies Act 1956 having its Registered Office at "BHEL House", SIRI Fort, New Delhi 110 049) through its High Pressure Boiler Plant Division located at Tiruverumbur, Tiruchirapalli- 620 014 (hereinafter called 'the Company') having entered into a contract with …….hereinafter called ' the said contractor ' which term includes 'suppliers' for the purpose of this Bond and under the terms and conditions of the contract No.……. Dt ……. Between BHEL, Trichy and as per the contract, the contractor / supplier is to furnish a performance Bank guarantee for Rs. ……. for the due performance of the equipment to be supplied under the above referred contract and for the fulfillment of all the terms and conditions of the contract, We …….(indicate the name of the bank) (herein after referred to as the bank) at the request of …….. (Contractor(s)) do here by undertake to pay the company an amount not exceeding Rs…….against any loss or damage caused to or suffered or would be caused to or suffered by the company by reason of any breach by the said contractor (s) of any of the terms and conditions contained in the said agreement.

2. We …….(indicate the name of the bank with full address), do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Company stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the Company by reason of breach by the said Contractor(s) of any of the terms and conditions contained in the said Agreement or by the reason of the contractor(s) 'failure to perform' the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs._____.

3. We undertake to pay unconditionally to the Company any money so demanded notwithstanding any dispute(s) raised by the Contractor in any suit, or proceedings pending before any Court or Tribunal or Arbitration or before any other authority relating thereto our liability under this present being absolute and unequivocal. The payment under this guarantee would not wait till the disputes have been decided by any Court or Tribunal or in the arbitration proceedings or by any other authority. The payment so made by us under this Bond shall be a valid discharge of liability for payment thereunder and the Contractor(s) shall have no claim against us for making such payment.

4. We…….(indicate the name of Bank), further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the Company under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till_____Office / Department/ Division of the Company certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.

5. (I) Unless a demand or claim under this guarantee is made on us in writing on or before the _____we shall be discharged from all the liability under this guarantee thereafter. But where such claim or demand has been preferred by the Company with the Bank before the expiry of the said date, the claim shall be enforceable notwithstanding the fact that the said enforcement is effected after the said date.

(ii) For the purpose of this clause, any letter making demand on the Bank by M/s. BHEL dispatched by Registered Post with Ack.Due or by Telegram or by any Electronic media addressed to the above mentioned address of the Bank shall be deemed to be the claim / demand in writing referred to above irrespective of the fact as to whether and when the said letter reaches the Bank, as also any letter containing the said demand or claim is lodged with the bank personally.

6. We ……..(indicate the name of Bank), further agree with the company that the Company shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor (s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said Contractor(s) or for any forbearence, act or omission on the part of the company or any indulgence by the company to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating would, but for this provision, have effect of not so relieving us.

7. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

8. It shall not be necessary for the company to proceed against the contractor before proceeding against the guarantor-bank and the guarantee herein contained shall be enforceable against them notwithstanding any security, which the company may have obtained or obtain from the Contractor shall, at the time when proceedings are taken against the guarantor hereunder be outstanding or unrealised.

9. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirapalli.

10. The guarantor hereby declare that it has power to execute this guarantee and the executant has full powers to do so on its behalf under the proper authorities granted to him/them by the guarantor.

11. We ……(indicate the name of Bank) lastly undertake not to revoke this guarantee during its currency except with the previous consent of the company in writing.

In witness whereof we……., (indicate the name of Bank) have hereunto setout Bank Seal the_____day _____month 200
BANK E-MAIL ID:
BANK PHONE NO.
BANK FAX NO:

FORGE SHOP

1.00.00 Name of Company, Address

2.00.00 Type & No. of Forging Press : Forging hammer

Capacity - (Tonnes)

3.00.00 Max. size of Material that can be handled dimensions, weight and type of materials.

4.00.00 Production with relevant standards (for last three years)

Carbon Steel

Stainless Steel

Alloy steel

Inconel –

5.00.00 Heating Facilities -

5.10.00 Furnace - No. and capacity

5.10.10 Type - Oil Fired, Gas Fired, Electric heating

5.10.20 Dimensions

5.10.30 Mode of Temperature control & extent of automation.

5.10.40 Temperature recording facilities

5.20.00 Distance of heating furnace from Forging Press

5.30.00 Handling Facilities - Crane/Truck/Manual/ any other indicate list of such facility.

6.00.00 Availability of in-house Heat Treatment facility Yes/No

6.10.00 If yes: Type of heat treatment possible

6.20.00 If no, source of Heat Treatment with relevant details.

6.20.10 Annealing -

6.20.20 Normalising -

6.20.30 Stress Relieving -

6.20.40 Quenching: - Water/Oil

Any other Heat treatment? -

6.20.50 Type & No. of Furnace -

6.20.60 Dimensions, Type of Temp. Control,
Temp - Time Recording facilities.

7.00.00 Source of Raw Materials -

Indigenous/imported (Indicate source and quantity of material procured during last three years)

8.00.00 Machining Facilities -

List of machines installed

9.00.00 Cutting facilities - Type & No. of Machine

10.00.00 Availability of testing facilities Yes/No

10.10.00 If no - Indicate source of testing with relevant details

10.20.00 If yes :-

10.20.10 Chemical Analysis: Method

10.20.20 Mech. Testing

10.20.21 Hardness testing

10.20.22 Metallorgraphy

10.20.23 Universal Tensile Testing M/C -
Ambient Low Temp.

10.20.24 Any other tests –

10.30.00 Non-destructive

10.30.10 Radiography

FORGE SHOP

10.30.20 Ultrasonic Test

10.30.30 Dye Penetration

10.30.40 MPI

10.30.50 Any other NDE

11.00.00 Experience with Third Party/Statutory Agency:

Indicate the agency

12.00.00 Source of procurement of Dies & availability for Machining of such dies.

13.00.00 Consistency in supply:

13.10.00 Has the vendor produced items of similar nature in past?

13.20.00 Has the vendor maintained delivery commitments in past?

13.30.00 Has there been frequent labor trouble in past?

13.40.00 Has there been major upset due to faulty material management?

13.50.00 Is the system of planning & scheduling resilient enough to overcome temporary setbacks & make up lost time?

13.60.00 Has the vendor got standby arrangement for power?

13.70.00 Can the vendor quickly offload the work to other reliable sub-vendor?

13.80.00 Total order booked till date.

14.00.00 Remarks:

PLACE: SIGNATURE WITH SEAL

DATE:

MINISTRY OF COMMERCE AND INDUSTRY

(Department of Industrial Policy and Promotion)

(CENTRAL BOILERS BOARD)

NOTIFICATION

New Delhi, the 15th April, 2015

G.S.R. 286(E).—Whereas certain draft regulations further to amend the Indian Boiler Regulations, 1950 were published *vide* number G.S.R. 855(E), dated the 1st December, 2014 for inviting objections and suggestions from all persons likely to be affected thereby, before the expiry of the period of forty-five days from the date on which the copies of the said Gazette notification were made available to the public;

And whereas, copies of the said Gazette were made available to the public on the 23rd December, 2014;

And whereas, objections and suggestions have been received from various persons and stakeholders within the specified period in respect of the amendments contained in the said notification and all the objections and suggestions have been duly considered;

Now, therefore, in exercise of the powers conferred by section 28 of the Boilers Act, 1923 (5 of 1923), the Central Boilers Board hereby makes the following regulations further to amend the Indian Boiler Regulations, 1950, namely:—

1. Short title and commencement.—(1) These regulations may be called the Indian Boiler (Amendment) Regulations, 2015.

(2) They shall come into force on the date of their publication in the official Gazette.

2. In the Indian Boiler Regulations, 1950 (hereinafter referred to as the said regulations),after regulation 3A, the following regulation shall be inserted, namely:—

" 3B. **Exemption of boiler or boiler components.—**

As per provisions of sub-section (3) of section 34 of the said Act, any boiler or boiler component may be exempted in the whole or any part of the State from the operation of all or any of the provisions of the Act, subject to the following conditions:

(a) design and construction of boiler or boiler component is in accordance with international code or standard including British Standards(BS), American Society of Mechanical Engineers(ASME) Boiler and Pressure Vessel Code, Tubular Exchanger Manufacturers Association(TEMA), Technical Requirements Document(TRD), GOST and Japanese Industrial Standards(JIS);

(b) materials used in the construction are not specifically prohibited by the said regulations;

(c) design, construction and materials of boiler or boiler components have been satisfied by the State Governments by necessary tests and examination like Remnant Life Assessment, which shall be carried out by the owner.".

3. In the said regulations, for regulation 4, the following regulation shall be substituted, namely:—

"4. Standard requirements.—The construction of boilers shall comply with the following requirements, namely:—

(a) Material—All plates, rivets and bars used in the construction of boilers shall be tested and found to conform with the regulations hereinafter contained.

(b) Manufacture—(i) All boilers during construction shall be under the supervision of a Competent Person and shall be inspected at all stages of construction prescribed in Appendix J. Tubes and steam-pipes shall also be inspected at the makers' works at the stages prescribed in Appendix J, and the tests conducted by the makers shall also be witnessed by the Competent Person;

(ii) the welders engaged in welding of boilers, boiler components, economisers, feed pipes, steam-pipes and super-heaters shall possess certificate in Form XIII.

(c) Certificates, drawings and specifications.—In advance or alongwith an application for registration of a boiler under sub-section (1) of section 7 and clause (c) of sub-section (1) of section 14 of the Act, the following certificates and drawings or specifications shall be furnished to the Chief Inspector(certificates and drawings or specifications may also be submitted in soft copies with digital signatures), namely:—

(i) (I) a certificate in Form II(1) or Form II(2), as the case may be, from an Inspecting Authority, certifying that the material was tested and the boiler was built under their supervision in respect of the inspection of the boiler during construction and the hydraulic test applied on completion.

(II) in case of a boiler which is to be assembled only at site, requirement of the hydraulic test on a completely assembled boiler by the Inspecting Authority shall not apply provided that the individual parts of such boiler have been hydraulically tested and certified by the Inspecting Authority separately as required under these regulations.

(III) in case of Waste Heat Boilers, a certificate in Form II(1) or Form II(2) as applicable may be issued by the Inspecting Authority of the State, where the boiler is installed, after completion of construction at site on the strength of the certificate supplied to him in prescribed forms by the owner for the individual components which are required to be furnished for registration of a boiler under clause (c) of regulation 4, shall be submitted to the Inspecting Authority of the State, where the boiler is installed, before the commencement of construction of such boiler at the site.

Note.—In lieu of Form II(1) or Form II(2) as the case may be, a certificate in Form II-B may be granted by the Inspecting Authority for boilers for which variations from the standard conditions in respect of material, design and construction features have been permitted by the Board or the Inspecting Authority under sub-regulation (5) or sub-regulation (6) of regulation 3;

(ii) a certificate in Form III of manufacture and test signed by the maker or by a representative of the maker of the boiler containing a description of the boiler, its principal dimensions, particulars of the kind of material used in its construction, the thickness of all plates, the diameter of and method of forming the rivet holes in the shell plates, particulars of any departure from ordinary practice in making the shell, such as, solid rolling or welding, the hydraulic test to which the boiler was subjected, the intended working pressure, the area of heating surface, the maximum continuous evaporative capacity, the year and place of manufacture, and the works number of the boiler.

Note: The Inspecting Authority may, however, approve a modified form of certificate wherein items which do not pertain to a particular boiler may be omitted;

(iii) (I) in case of shop assembled boilers, drawings to an appropriate scale showing the principal dimensions, sections, Maker's number, position of Inspecting Authority's stamp, bill of material, welding details and design parameters.

(II) in case of site assembled boilers, drawings showing General and Pressure Parts arrangement, drawing(s) of coils, panels, headers and drums with details of principal dimensions, seams, welding details, bill of materials, design parameters and operating parameters. Manufacturer may use appropriate scale for drawings. In case of identical or similar multiple sub-assemblies, drawing(s) for only one sub-assembly may be submitted.

(III) in case of riveted boilers, drawings with details of riveting of longitudinal and circumferential seams with pitch of rivets, cross spacing of rivets rows and diameters of rivet holes, the radii of curvature of dished end plates, fillets and flanges and corners of bent plates, and where gusset stays are fitted the number and diameter of rivet holes in each gusset stay;

(iv) (I) a certificate in Form IV from the steel maker and a certificate from the maker of the plates, rivets or bars, of the nature referred to in regulations 26 and 27 respectively and the certificate from the maker of the plates, rivets or bars, shall show the charge numbers, the plate or bar numbers and the number and dimensions of the various plates tested, their chemical analysis, their ultimate tensile strength in Kilograms per square millimeter of section, the percentage of elongation and the length on which measured, the number, kind and result of bend or other tests made and the date of tests.

(II) in case any question arises in respect of the fitness of the boilers for the working pressure approved by the Inspecting Authority within a period of three years from the date of their registration, the owner shall if requested by the Chief Inspector obtain and furnish the original documents specified in the said clauses:

Provided that in respect of the steel made and tested by Well-known Steel Makers recognised by the Central Boilers Board in the manner laid down in regulations 4A to 4H, a certificate of Well-known Steel Maker in Form IV shall be accepted in lieu of a certificate from an Inspecting Authority:

Provided further that in respect of the tubes or pipes made and tested by well-known tube/pipe maker recognised by the Central Boilers Board in the manner as laid down in regulations 4A to 4H, a certificate of manufacture and test of well-known tube/pipe maker in Form IIIA or IIIB, as the case may be, shall be accepted in lieu of a certificate from an Inspecting Authority.

(III) in case where the original certificate from well-known steel makers in Form IV is not produceable, owing to such certificate containing details of plates used for other purposes also, an extract from the original certificate duly signed by the makers of the boiler and countersigned by the Inspecting Authority shall be acceptable in lieu of the certificate in Form IV, provided all information required in Form IV are furnished in the extract;

(v) in the case of fusion welded drums diagram of welded repairs and temperature charts of heat-treatment shall also be furnished and in addition, certificates in respect of yield point at service temperature (0.2 per cent proof stress), the average stress to produce an elongation of 1 per cent (creep) in 100,000 hours and the average and the lowest stresses to produce rupture in 100,000 hours in the material, wherever is applicable, are to be furnished;

(vi) for tubes and pipes subject to internal pressure, a certificate giving results of tests regarding chemical analysis, warm yield point (0.2 per cent proof stress), the average stress to produce an elongation of 1 per cent (creep) in 100,000 hours and the average and the lowest stresses to produce rupture in 100,000 hours in the material wherever applicable, shall be furnished.

Note : Until 33,000 hours tests are carried out by the National Metallurgical Laboratory or Corporate Research and Development Laboratory of Bharat Heavy Electricals Limited, Hyderabad for collecting elevated temperature data of alloy steel produced indigenously against American Society of Mechanical Engineers (ASME) or British Standards(BS) or European Standards(EN) Code, these grades of steel may be accepted and long time elevated temperature properties/maximum allowable stress values given in American Society of Mechanical Engineers (ASME) or British Standards(BS) or European Standards(EN) Code, as the case may be, used for the purpose of design:

Provided that:—

(I) a certificate is furnished by the producer of the steel to the effect that the steel has been manufactured strictly in accordance with the technical requirements of the American Society of Mechanical Engineers (ASME) or British Standards(BS) or European Standards(EN) Code to assure that the creep rupture requirements are complied with;

(II) the steel maker furnishes the necessary certificate that the steel conforms to the chemical analysis, room and elevated temperature mechanical properties given in American Society of Mechanical Engineers (ASME) or British Standards(BS) or European Standards(EN) Code as the case may be;

(III) the short-term stress-rupture tests for 1000 hours as described below are carried out by National Metallurgical Laboratory/steel plants for the purpose of checking whether the steel is up to the specification and also to ensure that the steel is capable of meeting the long-term rupture stress values/maximum allowable stress values given in American Society of Mechanical Engineers (ASME) or British Standards(BS) or European Standards(EN) Code, as the case may be, and a certificate is given by National Metallurgical Laboratory or steel plant to this effect;

(IV) two numbers of 1000 hour creep rupture tests shall be carried out at a temperature 50°C above the service temperature for each grade of steel for tubing or piping or castings or plates grades; when in furnace or in superheater zone:

Provided further that,- (A) the forging to be used in valves should be tested at 550°C for 1000 hours and the stress to cause rupture in 1000 hours at above temperatures may be taken from the master curve corresponding to – 20 percent line; (B) at this stress, a minimum rupture life of 1000 hours is expected and both the samples should pass 1000 hour tests at the above stress and temperature; (C) these samples may be selected at random by the Chief Inspector of Boilers of the respective State and the samples could be in the form of semi-finished products, say, forged bars of about 25 mm^2 which will undergo heat treatment as prescribed by the relevant specifications;

(vii) for such boilers having a capacity of 20 tons per hour and above which are required to be assembled at site, the mountings may be supplied separately and all boilers of capacity less than 20 tons per hour shall carry all the mountings or fittings certificates in respective forms with details mentioned in Form III, issued at the time of manufacture of boilers.

(d) Maker's stamp—The boiler shall have stamp in a conspicuous place such as—

MAKER'S NAME……

Work's Number…… Year of Make…… Tested to……
Kgs./Cm²…… on…… W.P. …… Kgs./Cm². ……

Competent Person's or
Inspecting Authority's Official Stamp

(e) Certificates for pipes—A certificate of manufacture and test in Form III-A, signed by the maker and the Inspecting Authority shall be furnished.

(f) Certificates for tubes—A certificate of manufacture and test in Form III-B, signed by the maker and the Inspecting Authority shall be furnished.

Note: In case of pipes or tubes made by Well-known Pipe or Tube Makers [recognised by the Central Boilers Board in the manner as laid down in regulations 4A to 4H] in India or other countries, material testing including mechanical tests may be carried out by them and the particulars regarding testing of material including mechanical tests as certified by them shall be noted in the appropriate column or paragraphs in the certificate in Form III-A or Form III-B and in case, certificate from the "Well-known Pipe or Tube Makers" as aforesaid is produced, such certificate may be accepted in lieu of the certificate from the Inspecting Authority insofar as it relates to testing of material including mechanical tests specified in this form.

(g) Certificates for mountings and fittings.—A certificate of manufacture and test in Form III-C, signed by the Maker and the Inspecting Authority in respect of boiler mountings and steam-pipe fittings during manufacture, shall be furnished.

Note: A photostat copy of the certificate in Form III-C shall be accepted provided it is endorsed by the manufacturer or the Inspecting Authority who has signed the original certificate.

(h) Certificate of inspection during manufacture of Headers, Desuperheaters or Attemperater, Blowdown Tank, Feed Water Tanks, Accumulator and Dearator.—A certificate of manufacture and test in Form III-H, signed by the maker and the Inspecting Authority shall be furnished.

(i) Certificate of inspection during manufacture of Dished Ends or End Covers.—A certificate of manufacture and test in Form III-I, signed by the maker and the Inspecting Authority shall be furnished.".

4. In the said regulations, for regulation 4A, the following regulation shall be substituted, namely:—

"4A. Application for recognition

(1) An application for recognition as Competent Authority, Inspecting Authority, Well-known Material Testing Laboratory, Well-known Steel Maker, Well-known Foundry/Forge, Well-known Tube/Pipe Maker and Well-known Remnant Life Assessment Organisation shall be made by a firm to the Secretary, Central Boilers Board, Ministry of Commerce and Industry (Department of Industrial Policy and Promotion), New Delhi, for recognition in one of the aforementioned areas of activity in which that firm is engaged.

(2) Application under sub-regulation (1) shall be made in duly filled in Questionnaire Form (Forms XV-A to XV-G) applicable to the area of activity or may also be submitted on-line.

(3) Any firm applying for recognition as Competent Authority and Inspecting Authority under sub-regulation (1) shall have a minimum experience of two years in the area of activity for which recognition is applied for. For recognition as Well-known Material Testing Laboratory, Well-known Steel Maker, Well-known Foundry/Forge, Well-known Tube/Pipe Maker and Well-known Remnant Life Assessment Organisation, experience of two years' shall be as per the provisions of these regulations.

(4) In case of firms in foreign countries seeking recognition as Well-known Steel Maker, Well-known Pipe/Tube Maker, Well-known Foundry or Well-known Forge, a fee of US $ 10,000 (US Dollars Ten thousand only) shall be deposited alongwith the completed Questionnaire form to meet the expenses of the visit of the Evaluation Committee.

Provided that where the firm has more than one manufacturing unit in the same country, an additional fee at the rate of US $ 2000/- (US Dollars Two thousand only) per additional unit shall be deposited.

(5) In case of firms in foreign countries seeking recognition as Competent Authority and Inspecting Authority, a fee of US $ 1,000 (US Dollars One thousand only) shall be deposited alongwith the completed Questionnaire forms.

(6) In case of firms in India seeking recognition under sub-regulation (1), a fee of Rupees 15,000/- (Rupees Fifteen thousand only) shall be deposited alongwith the completed Questionnaire Form and for renewal of recognition, a fee of rupees 10,000/- (Rupees ten thousand only) shall be deposited alongwith the completed Questionnaire Form.

(7) The Evaluation Committee shall carry out the evaluation of the manufacturing works of the firms within ninety days of receipt of the fees in case of manufacturing works in foreign countries and within sixty days in case of manufacturing works within the country .

Appraisal Committee or Evaluation Committee as the case may be, shall also evaluate the performance of firm's applying for recognition as Competent Authority or Inspecting authority within sixty days of receipt of fee.

The certificate of recognition shall be valid for a period of five years from the date of the visit of the plant by the Evaluation Committee or meeting of Appraisal Committee, as the case may be. In the case of renewal of the recognition, if an application is received for renewal alongwith the required fee as per this regulation, the firm may be recognised

after following the procedure laid down in these regulations and the certificate shall be issued for a further period of five years.".

5. In the said regulations, in regulation 4J, for sub-regulation (2), the following sub-regulation shall be substituted, namely:—

"(2) **Minimum qualifications and experience.—**

(a) must be a graduate in Mechanical or Production or Power Plant or Metallurgical Engineering from a recognised institute;

(b) minimum five years experience singly or cumulatively in the following fields related to boilers:—

(i) Design;

(ii) Manufacture;

(iii) Commissioning;

(iv) Operation and maintenance;

(v) Inspection and certification during manufacture or operation and maintenance;

(vi) High Pressure Welding—Inspection;

(c) Level-II NDT Certificates from Indian Society for Non-Destructive Testing (ISNT) or any other professional body recognised by ISNT in Non Destructive methods of testing in radiography and ultrasonic testing.".

6. In the said regulations, in regulation 4H, the opening paragraph shall be numbered as sub-regulation (1) thereof, and after sub-regulation (1) as so numbered, the following sub-regulation shall be inserted at the end, namely:—

"(2) For recognition as Competent Authority, the Evaluation Committee shall evaluate the performance of a firm applying for recognition as Competent Authority in accordance with the provisions of these regulations, in particular in the following areas, namely:—

(i) the firm or company shall be a registered entity and not a sole proprietorship. For operation in India, firm or company shall be registered in India also;

(ii) the authorised signatory responsible to issue certificate to qualified welders on behalf of the Competent Authority shall be an employee of the Competent Authority and should be an engineer with five years' experience in the field of welding having a degree/post graduate degree in Mechanical or Production or Metallurgical or Welding engineering and certificate of Level-II in Radiography Techniques**;**

(iii) the firm or company shall have a workshop with following facilities:

(a) electric welding sets for conducting welding of the specimens;

(b) pre-heating facilities;

(c) platforms for welding;

(d) the following in-house testing machines:

(i) universal testing machine;

(ii) NDT – dye penetration tests;

(iii) machines for preparation of specimens;

(iv) hardness tester (optional);

(e) radiography, micro and macro examination of samples may be outsourced to approved agencies.

Note : For operation in India, workshop with above facilities shall be available in India also;

(v) the firm or company shall be familiar with the requirement for examination of welders under these regulations.

(vi) an Inspecting Authority may also work as a Competent Authority for in-house certification of welders and for this purpose it may avail the facility of an outside agency having above facilities for testing of weld specimens for in-house certification of welders, provided it has in-employment an authorised signatory as mentioned in item (ii) above.

Note: All the existing firms or companies recognised as Competent Authority shall continue to be so recognised as such, till the validity period of the recognition.".

7. In the said regulations, in regulation 4I, sub-regulation (ix) shall be omitted.

8. In the said regulations, in regulation 16, in clause (d), for the words "The minimum values of the stress", the following words "The maximum permissible stress shall be taken as available in governing Boiler codes of the country of the material to which it belongs and in case of non-availability of the value, for the purpose of evaluating the maximum permissible stress, Et, the minimum values of the stress" shall be substituted.

9. In the said regulations, in regulation 166, in clause (f), for the letters, words, symbol, brackets and *figure* "f =is the maximum allowable stress of the plate at the design temperature (in N/mm^2)", the letters, words, symbol, brackets and figure " f is the maximum permissible stress values as available in the governing codes of the country of the material to which it belongs (in N/mm^2)" shall be substituted.

10. In the said regulations, in regulation 187, for the letter, symbol and words "f = allowable stress", the letter, symbol and words " f = the maximum permissible stress values as available in the governing codes of the country of the material to which it belongs " shall be substituted.

11. In the said regulations, in regulation 278, for the letter, symbol and words "f = permissible stress", the letter, symbol and words " f = the maximum permissible stress values as available in the governing codes of the country of the material to which it belongs " shall be substituted.

12. In the said regulations, in regulation 278A, in clause (f), for the letter, symbol, words, brackets and figure "f =is the maximum allowable stress of the plate at the design temperature (in N/mm^2)", the letter, symbol, words, brackets and figure " f is the maximum permissible stress values as available in the governing codes of the country of the material to which it belongs (in N/mm^2)" shall be substituted.

13. In the said regulations, for regulation 281, the following regulation shall be substituted, namely:—

"281. *Requisite Mountings, Fittings and Auxiliaries

(1) Every boiler shall be provided at least with the following, namely:—

(a) two safety valves, one of which may be a high steam and low water type safety valve and in no case the bore of the seat of the valve should be less than 19 mm (3/4");

(b) two means of indicating water level;

(c) a steam pressure gauge;

(d) a steam stop valve;

(e) a feed check valve;

(f) one feed apparatus:

Provided that for boilers fired by gaseous, liquid or solid fuels in suspension where heating surface exceeds 20 square meters shall be provided with minimum two feed apparatus which will have a combined capacity of not less than the maximum continuous rating of the boiler: Provided further that for other boilers where residual heat is there even after fuel supply is cut-off, two feed apparatus each having a capacity of not less than maximum continuous rating of the boiler shall be provided. (*For boilers in battery see Regulation 336A*);

(g) a blow-down cock or valve;

(h) fusible plugs as provided under regulation 331;

(i) an attachment for Competent Person's test gauge;

(j) a manhole, where size and construction permit, and such mudholes or sightholes as are necessary for effectively cleaning the boiler.

(2) In the case of boilers fitted with integral superheaters, an additional safety valve shall be fitted at the end of the superheaters outlet header.

(3) In the case of boilers with no fixed steam and waterline, the fitting of such accessories that are manifestly not needed or used, such as water gauges, water columns and gauge cocks, may not be insisted upon.

(4) In the case of automatic or semi-automatic oil-fired or gas-fired boilers, low water alarms may be fitted in preference to fusible plugs provided such boilers are equipped with automatic tripping device to disconnect fuel supply and to start the feed pump simultaneously in the event of low water in the boilers.

(5) In the case of a single boiler of the shell type and not connected in a battery with other boilers, the heating surface of which does not exceed 102 m² (1100 sq. ft.), two independent sources of power supply to the two feed apparatus will not be necessary.

(6) In the case of miniature boilers under Chapter XIV, the steam pressure gauge may be connected to the steam space or to a steam connection to the water column by a syphon tube or equivalent device that will keep the gauge tube filled with water and if brass or bronze composition is used, the minimum size of the syphon tube shall be 6 mm. (¼ in.) standard pipe size; for other materials the minimum inside diameter of the pipe or tube shall be 13 mm. (½ in.)

***Note:** It is recommended that in Lancashire and Cornish Boilers one of the safety valves should be of a high steam and low water type. In Water Tube and Horizontal Multi-tubular Boilers, a low water alarm directly operated by steam should be fitted. Rams-bottom type safety valves consisting of two valves and with spring and lever in common may be considered as two safety valves for the purpose of this Regulation. In the case of Marine Type boilers low water alarm may be fitted in place of a fusible plug.

(7) For Electrode boilers, see Regulation 437.

(8) In case of boilers with reheaters, the reheaters shall be protected with one or more relieving devices of 105 % capacity (15 % of the total capacity shall be located in the steam flow path between reheater outlet and first stop valve) to avoid over pressure in case of internal failures.".

14. In the said regulations, in regulation 338,-

(1) for sub-regulation (a), the following sub-regulation shall be substituted, namely:—

"(a) (i) The working pressure of the tubes shall be determined by the following formula:

$$W.P. = \frac{2f(T - C)}{(D - T + C)} \quad \text{Eqn. (87)}$$

where, T =minimum thickness of tubes, that is, nominal thickness less the permissible negative tolerance in mm (inch),

C =0.75 mm (0.04") for working pressure upto and including 70 kg/cm^2 (1000 lbs./sq. inch)

or C = 0 for working pressure exceeding 70 kg/cm^2 (1000 lbs./sq. inch),

W.P. =working pressure of boiler in kg/cm^2 (lbs./sq. inch),

D =external diameter of tube in mm (inch),

f = maximum permissible stress values as available in the governing codes of the country of the material to which it belongs in kg/cm^2 (lbs./sq. inch). In case of non availability of the value, the following procedure for evaluating the permissible stress values shall be adopted.

(ii) For temperature at or below 454°C,

$$\frac{Ts}{2.7} \text{ or } \frac{Et}{1.5} \text{ whichever is lower}$$

(iii) For temperature above 454°C

$$\frac{Sr}{1.6} \text{ or } Sc \text{ whichever is lower}$$

where, Ts =minimum tensile strength of the material at room temperature,

Et =yield point (0.2% proof stress) at working metal temperature 't',

Sr =the average stress to produce rupture in 100,000 hours and in no case more than 1.33 times the lowest stress to produce rupture at the working metal temperature,

Sc =the average stress to produce an elongation of 1 per cent (creep) in 100,000 hours, at the working metal temperature.

Note: In case Sc values are not available in Material Standard and such materials are known to have been used in boilers in India or abroad, then for such materials the allowable stress may be taken as the lower of $\frac{Et}{1.5}$ or $\frac{Sr}{1.6}$

(iv) The working metal temperature shall be taken as:—

(a) for integral economiser tubes, the maximum water temperature for which the part of the element is designed plus 11°C (20°F);

(b) for furnace and boiler tubes, the saturation, temperature corresponding to the working pressure plus 28°C (50°F);

(c) for convection superheater tubes, the maximum steam temperature for which the part of the element is designed plus 39°C (70°F);

(d) for radiant superheater tubes the designed maximum steam temperature plus 50°C (90°F).";

(2) in sub-regulation (c), for clause (i), the following clause shall be substituted, namely:—

"(i) **General—**Tubes that are hot or cold bent for parts of boilers, including economizers, furnace walls, superheaters and reheaters, shall comply with this clause and shall be heat treated as under.

For Carbon Steel/Alloy Steel (except P-91 and Austenitic Stainless Steel)

-If percentage thinning is more than 25% - Post Bend Heat Treatment (PBHT) required.

-If Outer Diameter (OD) is less than 141.3 mm and R/D ≤ 1.5- PBHT required

-If Outer Diameter (OD) is more than 141.3 mm and R/D ≤ 2.5- PBHT required

For P-91 and Austenitic Stainless Steel- requirements as specified in material specifications shall be followed.

Where, R is the mean radius of the bend to the centre line of the tube (in mm) & D is the outside diameter of the tube (in mm).

Butt welds shall not be permitted within bends.

Thinning and departure from circularity limits shall be demonstrated by one of the following methods:

(a) relevant and satisfactory service experience;

(b) a procedure test;

(c) by measurement of 2% of the bends, including the first bend of each shift.

The method selected shall be at the option of the manufacturer.".

15. In the said regulations, in regulation 340, in sub-regulation (f), for the letter, symbol and words "f =permissible stress for the material at the working metal temperature", the letter, symbol and words " f = maximum permissible stress values as available in the governing codes of the country of the material to which it belongs" shall be substituted.

16. In the said regulations, in regulation 362, in sub-regulation (c), in clause (i), for the letter, symbol, words and figure "S= maximum permissible stress as specified in Table 8", the letter, symbol,words and figure " S= maximum permissible stress values as available in the governing codes of the country of the material to which it belongs " shall be substituted.

17. In the said regulations, in regulation 379,-

(1) in sub-regulation (a) for clause (i), the following clause shall be substituted, namely:—

"(i) subject to the provisions of sub-regulation (e) of regulation 381, every sub- critical boiler shall be hydraulically tested after erection at site in presence of the Competent Person to 1¼ times the maximum working pressure as certified by the Inspecting Authority in Form II, to be stamped on the boiler, as free from any indication of weakness or defects and every Super critical boiler, with no fixed steam and waterline, having pressure parts designed for different pressure levels along the path of water-steam flow, shall be hydraulically tested after erection at site in presence of the Competent Person to a pressure of not less than 1½ times the maximum working pressure at the superheater outlet but not less than 1¼ times the maximum working pressure of any part of the boiler as certified by the Inspecting Authority in Form II, to be stamped on the boiler, as free from any indication of weakness or defects.";

(2) in sub-regulations (c) and (k), the "Note" occurring at the end of said sub-regulations shall be deleted;

(3) for sub-regulation (g), the following sub-regulation shall be substituted, namely:—

"(g) hydraulic tests of boilers at subsequent examination shall, except when the Competent Person expressly requires otherwise, be made after the inspection and the test pressure to be applied to (i) sub-critical boilers at such subsequent examinations shall be from one and quarter to one and a half times the working pressure of the boiler; (ii) super critical boilers, at such subsequent examinations shall be from 1¼ to 1½ times the superheater outlet pressure.".

18. In the said regulations, in regulation 380, for sub-regulation (c), the following sub-regulation shall be substituted, namely:—

"(c) After adjustment of the valves to the correct blowing pressure, the boiler shall be tried under full steam and firing with the feed water shut off and the stop valve closed, during which time the Inspector shall note the accumulation of pressure and other details of the test as well as the loading and adjustment of the safety valves.

(i) in the case of sub-critical water tube boiler or boilers fitted with superheater, the feed water connection and stop valve need not be shut off and if the total valve area is lifted and found to be adequate by calculations, the requirement of the accumulation test may be assumed to have been satisfied if the valves are or have been found so adjusted that at least one safety valve on each boiler shall be set at or below the design working pressure of the boiler and remaining safety valves can be set upto 3 percent above the design working pressure:
Provided that all valves shall be lifted so that all steam which can be generated by the boiler can be discharged with a pressure rise not exceeding 10 per cent of the design working pressure;

(ii) in the case of super critical boiler or boilers, with no fixed steam and waterline, having pressure parts designed for different pressure levels along the path of water-steam flow, safety valves shall be set upto 10 percent above the design working pressure:
Provided that all valves shall be lifted so that all steam which can be generated by the boiler can be discharged with a pressure rise not exceeding 13 per cent of the design working pressure, provided the boiler is having automatic burner management system and Master Fuel Trip(MFT) on main steam pressure high. Lifting of safety valves can be tested by hydraulically actuated methods.

19. In the said regulations, for regulation 381, the following regulation shall be substituted, namely:—

"381. Procedure for registration.--

(1) (a) On receipt of an application for registration under sub-section (1) of Section 7, alongwith certificates and drawings as prescribed in regulation 4(c), the Inspector shall, when the boiler has been properly prepared for examination proceed to inspect with a view to satisfy himself that the boiler has not suffered any damage during its transit from the place of manufacture to the site of erection and if he is satisfied with the correctness of the maker's certificate and other particulars relating to the material and construction as stated therein [*vide* section 14(1)(c) and regulation 4], take due account of the workmanship and details of the construction of each part;

(b) subject to any discretionary power exercised by the Chief Inspector, shall accept the permissible working pressure of the boiler as certified by the Inspecting Authority in Form-II and Form-III and after inspecting the boiler, the Inspector shall hydraulically test it in accordance with requirements of regulations 379 and a provisional order under section 9 in Form V shall be issued after the hydraulic test.

(c) the Inspector shall enter the above particulars and dimensions of the boiler, together with details of the hydraulic test, in "Memorandum of Inspection" Book(Form-I, *vide* Regulation 386) which, together with all the makers' papers for the boiler, shall be submitted to the Chief Inspector with the Inspector's report under sub-section (3) of Section 7 and after issue of Registry number, the inspector shall conduct steam test in accordance with regulation 380 and enter the details of steam test in Form-I;

(d) where a certificate in Form II and a Memorandum of Inspection Book in Form I are furnished by an Inspecting Authority in accordance with clause (c) of regulation 4, the Inspector shall, on receipt of an application for registration under sub-section (1) of Section 7 of the Act, proceed to make such examination and measurement of boiler as may satisfy him that the boiler is the one certified by the Inspecting Authority and carry out a thorough examination and check the measurements to ensure the correctness of the Inspecting Authority's certificate and that no damage has been caused in transit.

(2) (a) The Inspector shall, if he is satisfied with the condition of the boiler, the correctness of the particulars and approved working pressure entered in "Form-I by the Inspecting Authority, subject the boiler to hydraulic test in accordance with regulation 379.

(b) If the Inspector is satisfied that the boiler has satisfactorily withstood the test, he shall issue a provisional order to enable the boilers to be worked.".

20. In the said regulations, in regulation 382, in sub-regulation (a), in the list of States and Union territories, with their distinguishing letters, (1) for the entry "Orissa OR", the following entry shall be substituted, namely:—

"Odisha OD";

(2) after the entry "Tamilnadu T", the following entry shall be inserted, namely:—

"Telangana TS" .

21. In the said regulations, for regulation 386, the following regulation shall be substituted, namely:—

"386. *Memorandum of Inspection Book.—

(a) A Memorandum of Inspection Book shall be prepared for each boiler in Form I and the Inspector shall enter in ink all particulars and dimensions of the boilers with the particulars of hydraulic test and steam test and his inspection notes in this book;

(b) at subsequent inspection Competent Person shall enter the dates of the inspections, hydraulic tests and steam tests, when such are made, with their notes thereon;

(c) the Inspector or Competent Person, as the case may be, should also enter in the Memorandum of Inspection Book the general condition of the boiler and of repairs, to what extent boilers have been cleared of brick work, a report of all casual visits for inspection of repairs, for inspection of main steam pipes, and reports on accidents;

(d) on submission of the Memorandum Book to the Chief Inspector, he will in the case of newly registered boilers, check all particulars and approve of the working pressure that is to be permitted and in the case of old boilers, the Chief Inspector shall examine the Inspector's notes of inspection and proposals made for repairs or reduction of pressure and a pressure once approved for the boiler should not be altered without the written authority of the Chief Inspector.".

22. In the said regulations, for regulation 391A, the following regulation shall be substituted, namely:—

"391A. Ageing of Boilers.—

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*The Memorandum of Inspection Book should always be kept clean and up-to-date Inspection Books except when actually required by the Inspector, should be filed in the office of the Chief Inspector.

(a) Shell Type Boilers:

(i) In order to take the ageing effect on boilers, the working pressure as calculated from the formulae in these regulations shall be reduced as per the table given below:

TABLE

Age of boiler exceeding (in years)	25	35	45	50	60	70	80	90	100
Maximum permitted working pressure per cent.	95	90	85	80	70	60	50	40	30

(ii) for those boilers, the plates of which have already been cut and tested shall be given a further lease of life of fifty years from the date of the test of the boilers. The working pressure that shall be allowed after the testing shall be reduced as per the table given below:

TABLE

Period after date of test (in years)	10	20	30	40	50
Maximum working pressure allowed (percentage)	90	80	70	50	30

(b) Water Tube Boilers:

(i) The boilers which are operating at a temperature of 400°C (main steam outlet temperature) and above shall be tested by the Remnant Life Assessment Organisation for the components as per Table 1 given below after they are in operation for 100,000 hours for assessment of the remnant life of the components.

If results are acceptable as per the standards laid down by the Central Boilers Board, a certificate shall be issued by the Chief Inspector/Director of Boilers as the case may be, for extending the life of the boiler for a further period of six years or such less period as recommended by the Remnant Life Assessment Organisation. This assessment of remnant life shall be carried out thereafter every six years by a Remnant Life Assessment Organisation approved by the Central Boilers Board . The Remnant Life Assessment Organisation shall work in close coordination with the office of the Chief Inspector/Director of Boilers as the case may be, in the field of remnant life assessment and extension. The working pressure of such boilers may be reduced on the recommendations of the Remnant Life Assessment Organisation;

(ii) the boilers which are operating at a temperature of less than 400°C (main steam outlet temperature) on completion of a life of twenty- five years are to be tested by the Remnant Life Assessment Organisation for the components as per Table 2 given below for assessment of the remnant life of the components. If results are acceptable as per the standards laid down by the Central Boilers Board, a certificate shall be issued by the Chief Inspector/Director of Boilers as the case may be, for extending the life of the boiler for a further period of twelve years or such less period as recommended by the Remnant Life Assessment Organisation. This assessment of remnant life shall be carried out thereafter every twelve years by a Remnant Life Assessment Organisation approved by the Central Boilers Board . The Remnant Life Assessment Organisation shall work in close coordination with the office of the Chief Inspector/Director of Boilers as the case may be, in the field of remnant life assessment and extension. The working pressure of such boilers may be reduced on the recommendations of Remnant Life Assessment Organisation.

Notwithstanding anything contained in this regulation, for boilers working at a pressure less that 50 kg/cm2 and temperature less than 400°C(main steam outlet temperature), such elaborate remnant life assessment is not mandatory. However, in such cases, drums and headers of such boilers shall be inspected by Ultrasonic testing, Magnetic particle testing and Dye Penetrant test.

Heat Recovery Steam Generators (HRSGs)*:*

Heat Recovery Steam Generators (HRSGs) which are operating at a temperature of 400°C(main steam outlet temperature) and above shall be non-destructively tested by the Remnant Life Assessment Organisation for the components as pert Table 3 given below after they are in operation for 100,000 hours for assessment of remnant life of the components.

TABLE 1

Component	Visual	Ultrasonic testing	Magnetic particle inspection	Liquid/ Dye Penetrant inspection	Repli-cation	Samp-ling	Deposit Analysis	Outside Dia-metre and	Fibre Optic Inspec-tion	Hard-ness	Others

								Thickness			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Steam Drum	Yes	Yes	Yes	Yes	Yes	No	Yes @	Yes *	No	Yes	
Water Drum	Yes	Yes	Yes	Yes	Yes	No	Yes @	Yes *	No	Yes	
Bottom headers	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	
Low temperature Header (Less than 400^0C)	Yes	Yes	No	Yes	No	No	No	Yes	Yes	Yes	
Attemperator Header	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Swell measurement
Economiser tubes	Yes	No	No	No	No	Yes	No	Yes	No	Yes #	
Convection Super-heater Coils	Yes	No	No	No	No	Yes	No	Yes	No	Yes #	Non-destructive oxide thickness inspection
Primary Super-heater Coils	Yes	No	No	No	No	Yes	No	Yes	No	Yes #	Non-Destructive Oxide thickness inspection
Prefinal Superheater Coils	Yes	No	No	No	No	Yes $$	No	Yes	No	Yes #	Non-Destructive Oxide thickness inspection
Final Superheater Coils	Yes	No	No	No	No	Yes $$	No	Yes	No	Yes #	Non-Destructive Oxide thickness inspection
Reheater Coils	Yes	No	No	No	No	Yes $$	No	Yes	No	Yes #	Non-Destructive Oxide thickness inspection
High Temperature headers (400^0C & above)	Yes	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	Swell measurement
Main Steam Piping	Yes	No	No	No	Yes	No	No	Yes	No	Yes	
Cold Reheat Piping	Yes	No	No	No	No	No	No	Yes	No	Yes	
Hot Reheat Piping	Yes	No	No	No	Yes	No	No	Yes	No	Yes	
SH/RH links	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Yes	
Bank Tubes	Yes	No	No	No	No	No	No	Yes	No	No	
Furnace Water Walls	Yes	No	No	No	No	Yes	Yes @	Yes	No	No	

Note: Other components shall be checked/examined visually

* OD or ID measurement to be taken for steam drum and water drum/bottom headers.

Hardness of Tube samples (both inside and outside) to be checked at Laboratory

@ Deposit analysis to be done

$$ Sample shall be subjected to accelerated creep rupture test.

TABLE 2

Compo-nent	Visual	Ultra-sonic testing	Mag-netic particle	Liquid/ Dye Pene-	Repli-cation	Samp-ling	Deposit Analy-sis	Outside Dia-metre	Fibre Optic Ins-	Hard-ness	Others

			ins-pection	**trant ins-pection**				**and Thick-ness**	**pection**		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Steam Drum	Yes	Yes	Yes	Yes	Yes	No	Yes @	Yes *	No	No	
Water Drum	Yes	Yes	Yes	Yes	Yes	No	Yes @	Yes *	No	No	
Econo-miser Coils	Yes	No	No	No	No	Yes	No	Yes	No	No	
Convec-tion Super-heater coils	Yes	No	No	No	No	Yes	No	Yes	No	No	
Primary Super-heater coils	Yes	No	No	No	No	Yes	No	Yes	No	No	
Final Super-heater coils	Yes	No	No	No	No	Yes	No	Yes	No	No	
Water headers	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No	
Steam Headers	Yes	Yes	No	Yes	No	No	No	Yes	Yes	No	
Bank Tubes	Yes	No	No	No	No	No	No	Yes	No	No	
Furnace Water Wall	Yes	No	No	No	No	Yes	Yes @	Yes	No	No	
Main Steam Piping	Yes	No	No	Yes	No	No	No	Yes	No	No	

Note : Other components shall be checked/examined visually

*OD or ID measurement to be taken for steam drum and water drum/bottom headers.

@ Deposit analysis shall be undertaken at laboratory"

TABLE 3

Component	**Visual**	**Ultrasonic**	**Magnetic Particle Inspection**	**Liquid/ Dye Penetrant Inspection**	**Replication**	**Samp Ling**	**Deposit Analysis**	**Od And Thick Ness**	**Fibre Optic Inspection**	**Hard Ness**	**Others**
1	2	3	4	5	6	7	8	9	10	11	12
SH/RH Tubes	No	No	No	No	No	Yes *	No	No	No	Yes *	
SH/RH Inlet & Outlet Header	Yes	No	No	No	Yes #	No	No	Yes	No	Yes	
DESH Header	Yes	No	No	No	Yes #	No	No	Yes	No	Yes	
DESH Inlet & Outlet link	Yes	No	No	No	Yes #	No	No	Yes	No	Yes	
Drum	Yes	Yes	Yes	Yes	Yes	No	Yes	ID & Thickness	No	Yes	
Down commers	Yes	No	No	No	No	No	No	Yes	No	Yes	
Evaporator Outlet links	Yes	No	No	No	No	No	No	Yes	No	Yes	
Evaporator tubes	No	No	No	No	No	Yes *	Yes *	No	No	Yes *	
Economiser Tubes	No	No	No	No	No	Yes *	Yes *	No	No	Yes *	
Economiser Inlet & Outlet Header	Yes	No	No	No	No	No	No	No	No	Yes	
Economiser to Drum link	Yes	No	No	No	No	No	No	Yes	No	Yes	

*To be decided based on history of failure

for the SH/RH headers above 400 deg.C .".

23. In the said regulations, in regulation 392, in sub-regulation (5), for the first paragraph, the following paragraph shall be substituted, namely:—

"(5) The Chief Inspector shall scrutinise and evaluate the application along with the replies to the Questionnaire and after satisfying himself that the following requirements are fulfilled, shall recognise the firm as a repairer within a period of thirty days, in the category applied for, namely:— ".

24. In the said regulations, in regulation 520, in the Note, after the words "provision of mechanical relief device" the words and letters "or a three way valve for bypassing H.P Heater" shall be substituted.

25. In the said regulations, in regulation 554A, in clause (f), for the letter, symbol, words, brackets and figure "f =is the maximum allowable stress of the plate at the design temperature (in N/mm2)", the letter, symbol, words, brackets and figure " f is the maximum permissible stress values as available in the governing codes of the country of the material to which it belongs (in N/mm2)" shall be substituted.

26. In the said regulations, in regulation 561, in sub-regulation (b), for clause (iv), the following clause shall be substituted, namely:—

"(iv) **Impact Tests.**—The impact test specimens are to be one of the two types and dimensions shown in Figures 21A and 21B (see regulation 263), the notch shall be contained in the weld-metal at approximately the axis of the weld and the axis of the notch is to be perpendicular to the surface of the plate.

The test shall be carried out as follows:

For the U-Notch as well as V-notch specimen at a temperature of 20 ± 2°C. In the case of V-notch specimen, the machining of the bottom of the notch shall be done very carefully.

The choice between U-Notch and V-Notch specimen shall be at the discretion of the Inspecting Authority.

The minimum result to be obtained from the impact test pieces shall be:

(a) U-Notch specimen 5.50 kgfm/cm2

(b) V-Notch specimen 3.46 kgfm/cm2

Note: Above values are equivalent to 2.76 kgfm divided by sectional area below the notch.".

27. In the said regulations, for regulation 605, the following regulation shall be substituted, namely:—

"605. Initial qualification test and issue of certificate.--

Every welder shall be duly tested within thirty days of receipt of application and qualified to the satisfaction of the Competent Authority who shall assess his performance for qualifying for the certificate. The Competent Authority may, thereafter issue a certificate in the Form XIII, within five days on receipt of satisfactory test reports indicating the class and type of welding in which he has qualified.".

28. In the said regulations, for regulation 608, the following regulation shall be substituted, namely:—

"608. Age and experience.--

A candidate who wishes to qualify for a certificate under these regulations shall not be less than eighteen years of age and shall have undergone a regular apprenticeship from a recognised industrial training institute or one year welder related course from any institute recognised by a State Government or Central Government or one year regular apprenticeship from an industrial organisation each followed by at least one year regular on job experience as a welder in a workshop of industry.".

29. In the said regulations, in regulation 621, in sub-regulation (c), in clause (v) in first paragraph, for the figure and letters " 19 mm", the figure and letters "12.7 mm" shall be substituted.".

30. In the said regulations, for Form I, the following form shall be substituted, namely:—

"FORM I

(See regulation 386)

MEMORANDUM OF INSPECTION BOOK

OR

REGISTRATION BOOK

BOILER INSPECTION DEPARTMENT

BOILER REGISTRY NUMBER

GENERAL

District……

Owner……

Address of Factory……..

Nearest Railway Station…….

Factory is…….. KMs …… 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 Rs	*Date of Payment*	*Date of Inspection*	*Certificate No. and Date*	*Period of certificate*	*Working Pressure Kg/cm2*	*Boiler Rating*	*Evaporation T/hr or Kg/hr*	*Initials of Inspector/Competent Person*

PARTICULARS AND DIMENSIONS

Type of Boiler: Leading Dimensions:

Maker: Intended Working Pressure :

Place and Year of make : Maker's Number :

Description of Boiler:

Details of Maker's stamp

Position of Stamp ……

MAKER'S CERTIFICATE

Boiler Name……

Maker Manufacture, hydraulic test to …… Kgs/Cm². Drawing No.…… received……

Inspecting Name……

Authority Tests of material, construction, supervision, hydraulic test…… received……..

DETAILS OF PRESSURE PARTS

S. No.	NAME OF THE PRESSURE PART	SIZE	MATERIAL SPECIFICATION

CYLINDRICAL SHELL

	(a) *Shell or Mud Drum*	*(b)* *Steam Drum*
Name of parts		
Number		
Length between end plates		
Length between end plates seam		
Diameter inside largest belt		
Thickness of Plates		
Number of belts of plating		
Longitudinal seams		
Position (o'clock)		
Circumferential seams		
No. of seams (end and inner)		

SHELL END PLATES AND STAYS

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, ….	
	Attach. to shell, crown or front, …….			
	Attach. to shell, back end, ……..			
	Attach. to uptake or furnace crown or front,…….			
	Attach. to furnace flue, back end……...			

STAYS	Gusset Stay, No. F.E., top, ……	Bottom, ……..	B.E., top, ……...	bottom, ……..
	Longtl. Stays No. …….	dia., …….....	…….	, ……...
	Longtl. Stays pitch, Vertical ……..	Horizontal…….....	Circumferential	……...
	Diagl. Do, …….			

MANHOLES, HAND AND SIGHT HOLES, DOORS AND STAND BLOCKS

Parts and materials

hereunder.....…….

MANHOLES	No. and position			
	Framed or plate flanged			
	Boiler opening, length × width			
	Frame opening, length × 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			

SIGHT HOLES	No. ……...	dimensions …….	positions ……...
	Compensation rings fitted ……	section ……	
	Doors, type …….	bolts dia.,…….. threads……	spigot clearance……..
	Cleaning plugs, No ……	dia. ……..	position ……
BLOCK ETC.	Height ……..	dia. (outside), top,… bottom….	thickness ……..……...
	Standpipe below stop valve, ……	height,…… dia. (outside) ……	thickness ……..……...
	Flanges ……...		

FIREBOX DETAILS

DETAILS OF FLUE TUBES

I &II PASS TUBES	No. plain, ……...	Stay overall	length …… specification ……..
	Plain, dia. (out) …….....	thickness, …	Front End.,welded, expd., beaded, feruled. Smoke End.,welded Expd., beaded, or …..
	Stay, dia. (out) …….....	thickness, …….	F.E.,welded, expd., beaded,, S.E,welded, Expd., ..

	Pitch of plain tubes, V ….	H …….....	D ……. C.Z. …….
	Pitch of stay tubes, V …..	H…….	D …….. C, Z …….
II &III PASS TUBES	No. plain,…….....	Stay overall	length …… specification ……..
	Plain, dia. (out) …….....	thickness, …	Front End.,welded, expd., beaded, fer Smoke End.,welded Expd., beaded, or
	Stay, dia. (out) …….....	thickness, …….	F.E.,welded, expd., beaded,, S.E,welded, Expd., ..
	Pitch of plain tubes, V ….	H …….....	D ……. C.Z. …….
	Pitch of stay tubes, V …..	H…….	D …… C, Z …….

FURNACE, CROWN AND UPTAKE

HORIZONTAL AND VERTICAL FURNACES

No., …… Type ……

No. of stiffener rings in each Furnace…… Longtl. seams position

Length between Centre	
Inside diameter	
Plate thickness	
Positions of cross tubes or stiffener	

MOUNTINGS AND FITTINGS

Valves etc.

	Number	*Diameter*	*Type*	*Material*	*Bolted OR welded to*
Safety					
Safety					
Main. Stop					
Aux. Stop					
Feed					
Blow Down					
Injector					

MISCELLANEOUS FITTINGS

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

Water gauges, top of lower nut is …… …… mm above ……..

Pressure gauge, Type …….. dia.in mm … range …… Kg/cm²

Pressure gauge, Maker …… No. ……. red line at …… Kg/cm²

Fusible plug, type ……. ……. position ……..

Blow down pipe connected to ……

Feed apparatus ……

Additional fittings …….

SAFETY VALVES

	(A)	(B)	(C)
No. of valves each chest …….			
Type ……			
Diameter of valve seat(mm)..			
Diameter of Neck(mm)……...			
Diameter of outlet(mm)…….			
……..			

REQUISITE AREA OF SAFETY VALVES

For Saturated steam

$$A = \frac{E}{C.P.}$$

For Superheated steam

$$As = A\sqrt{\left(1+\frac{1.5T}{1000}\right)}$$

E = ; C = ; P = ; A =

As = ; T = ; A = ;

HEATING SURFACE

Total Heating Surface ……Sq. m.

Boiler Rating ……..……

HYDRAULIC TEST (REGISTRATION)

Inspector …… Date of test …… Test pressure …… Kgs/cm²

Duration of test …… mins. Boiler pressure, gauge No. …..…… use at test ……..

Boiler pressure gauge compared with ……... on …… found …….

Position of Boiler at test ……

Brick work …… Lagging ……..……

Condition of boiler under test ……..

Condition of boiler mountings under test ……...……

M I book prepared by …… on …… submitted on …….

M I Book Checked by …….. on ……..

Least pressure, that for……Kg/cm²

Approved working pressure…… Kg/cm²

Chief Inspector/Director of Boiler's remarks and signature ……

STEAM TEST (REGISTRATION)

Inspector ……

Approved working pressure ……. .Kg/cm²

Boiler connections ……

Fuel used ……..

Safety Valve lifted at (A) …… kg/cm²..

Date of Test …….. … Test pressure ……. Kg/cm²

Condition of fire ……...

Draught …….

(B) …… kg/cm². (C) …… kg/cm²..

	Beginning	5 mins.	10 mins.	15 mins.	Difference
Timing of test…….					
Height of water in glass……					
Pressure by Boiler gauge…….					

Accumulation of pressure, in (%)……...

Do safety valves efficiently relieve boiler? ……

Condition of boiler under steam ……

Condition of mountings under steam ……

Thickness of washers or ferrules ……

Feed pump or injector worked ……..

Water gauge tested ……..

Boiler Attendant (or) Boiler Operation Engineer ……..

Limit of load on safety valves to be entered in Certificate ……

NOTES ON WORKING OF BOILER

Boiler is used for ……..

Constant, intermittent or seasonal work ……

Is boiler relieved by spare boiler ? ……

Nature of feed water ……

Fuel used …… Are printed instructions kept near boiler ? ……

Period between cleanings recommended by Inspector ……..

STEAM-PIPES

PLAN OF MAIN STEAM-PIPES

Registry Nos. of connected boilers ……

Provisions for disconnection from other boiler …….

RECORDS OF INSPECTIONS AND TESTS

First inspection by …… on ……

First hydraulic test to Kgs/cm² … by …… on ……

INSPECTION NOTES

PARTICULARS OF BOILER ATTENDANTS &BOILER OPERATION ENGINEER				
Date of visit	Name	Grade	Certificate No.	Date of Issue".

".

31. In the said regulations, for Form II, the following forms shall be substituted, namely:—

"**FORM II (1)**

[See regulation 4(c)(i)]

CERTIFICATE OF INSPECTION FOR SHOP ASSEMBLED BOILERS

INSPECTING AUTHORITY:_____ Certificate No._____

We hereby certify that the _____Boiler, built by M/s. _____ _____under Maker's number _____ was constructed under our supervision and inspected at various stages of construction by the Competent Person and that the construction and workmanship were satisfactory and in accordance with the standard conditions for the design and construction of boilers as per regulations framed under the Boilers Act, 1923.

The boiler is stamped on the _____ Shell Plate with stamp as shown hereunder:—

MAKER'S NAME : _____

MAKER'S NO. : _____ YEAR OF MAKE : _____

TESTED TO : _____ Kg./cm² (g) ON : _____

W.P. : _____ Kg./cm² (g)

COMPETENT PERSON'S OR INSPECTING AUTHORITY'S OFFICIAL STAMP

The boiler on completion was subjected to a Hydrostatic test pressure of _____kg/cm² (g) in the presence of the Competent Person on _____ day of _____ and satisfactorily withstood the test.

All welded seams were subjected to destructive and Non-Destructive examination wherever applicable and found satisfactory.

We have satisfied ourselves that the construction and dimensions of the boiler are as shown in the Maker's Drawing Number _____ signed by us and that the particulars entered in Maker's certificate of manufacture in Form III countersigned by us are correct to the best of our knowledge and belief.

Signature of Competent Person Signature of Inspecting Authority

Date and Seal

FORM II (2)

[See regulation 4(c)(i)]

CERTIFICATE OF INSPECTION FOR SITE ASSEMBLED BOILERS

INSPECTING AUTHORITY :_____ Certificate No. _____

We hereby certify that the_____ boiler; built by M/s_____
_____

under Maker's Number _____ was constructed under our supervision and

inspected at various stages of construction by the Competent Person and that the construction and workmanship were satisfactory and in accordance with the Standard Conditions for the design and construction of boilers as per regulations framed under the Boilers Act,1923.

The Boiler components are stamped as per details below, wherever applicable.

Component Name Drawing No.

Stamping Details

Maker's Name :_____

Maker's Number :_____ Year of make :_____

Tested to :_____ Kg/cm²(g) on _____

W.P. : _____ Kg/cm² (g)

Competent Person's or Inspecting Authority's Official Stamp

Samples of materials used in the constructions of the boiler were tested in the presence of the Competent person and found to comply with the regulations.

All welded seams were subjected to destructive and Non-Destructive examination wherever applicable and found satisfactory.

We have satisfied ourselves that the construction and dimensions of the boiler are as shown in the Maker's Drawing Number_____ 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 Competent Person Signature of Inspecting Authority

Date and Seal ".

32. In the said regulations, for Form III, the following form shall be substituted, namely:—

"FORM III

[See regulation 4(c)(ii)]

CONSTRUCTOR'S CERTIFICATE OF MANUFACTURER AND TEST

1. Description	Constructor's Name and address……
	Manufactured for/Stock purposes ……..
	Contract No. ……..
	Type of Boiler …….. Length overall
	Diameter inside Largest belt ……
	Design pressure …….. Kg/cm²
	Reheater Pressure ---------- ----------Kg/cm²
	Maker Number of boiler …….
	Year of Make …….
	Total heating surface …… Sq. m
	Evaporation capacity …… (for calculation of relieving capacity of safety valves)

Final Temperature of steam (Design) Superheater Outlet……ºC

Reheater Outlet …… ºC

Brief description of boiler …….

2. Parts manufactured at the constructor's works

Name of Components(s)…….

Drawing No.…….

Manufactured by ……

Identification marks ……..

Part(s) manufactured, inspected at all stages of construction by …… (Inspecting Authority).

Part(s) hydraulically tested and inspected after test by …….

3. Parts manufactured outside the constructor's works

Name of Components(s) …….

Drawing No.…….

Manufactured by ……

Identification marks ……..

Part(s) manufactured, inspected at all stages of construction by …… (Inspecting Authority).

Part(s) hydraulically tested and inspected after test by …….

Note: Similar information is to be furnished for each part manufactured outside the constructor's Works.

4. Construction

(a) The construction is in accordance with Chapter III/V/X/XII/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 …….

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

Note : Strike out whichever is not applicable

5. Details of Drums/Shells

No.	*Nomenclature*	*Nominal dia.*	*Length*	*Shell plate*		*Tube plate*		*Head*			*Manholes No. & Size*	*Hydrostatic test lbs./sp.in*
				Thickness in mm.	*Inside radius mm.*	*Thickness in mm*	*Inside radius mm*	*Thickness in mm*	*Type**	*Radius of dish in. mm*		
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*

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

6. Headers and Boxes

Description	*Size and shape*	*Thickness in mm*	*Head or end*		*Hydrostatic test Kg/cm²*
			Shape	*Thickness in mm*	

7. Mountings

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

8. Details of the safety valves and test results (Regulation 4 (c) (Vii)

Manufacturer …….

Identification marks of valves …….

Maker's No. ……..

Type ……

Life (mm) …… Drawings 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*

---

9. Certified that the particulars entered herein in manuscript by us are correct and that parts and fittings in sections 2 to 9, 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 Boilers Act, 1923, for a working pressure of …… *Kg/*cm² at our Works above-named and satisfactorily withstood a water test of …… *Kg/*cm² on the …… day of …… 20 …..…… in the presence of our responsible representative whose signature is appended hereunder.

Least pressure is for (name of the component)_____ and is _____ kg/cm²(g)

Maker's Representative
(Name, signature and stamp)

Maker _____
(Name, signature and stamp)

Name, signature and stamp of
Competent Person

Name, signature and stamp of
Inspecting Authority

Dated …… the day of …… 20……".

33. In the said regulations, for Form III-A, the following form shall be substituted, namely:—

" FORM III-A

[See regulation 4(e)]

CERTIFICATE OF MANUFACTURE AND TEST FOR PIPES

Certificate No. ---------- Date:—-----

Name of part & Quantity……

Drawing No…….

Maker's name and address……..

Customer's Name & Address…….

Design pressure……Kg/cm²

Design temperature…….. ºC

RAW MATERIAL

Process of manufacture……

Fully Killed/rimmed……

Chemical composition…….

Heat Number……..

Size……

Test Certificate No. & Date……....

Name of the Steel Maker…….

Name of Inspecting Authority…….

PIPES

Process of manufacture……..

Main dimensions……..

Tolerances……

Specification……

Bend test on pipe or weld ……..

Flattening test…….

Other tests…….

Tensile strength……..

Chemical Composition…….

Heat treatment……..

Hydraulic test…… Kg/cm²

Identification mark of Inspecting Authority/Well known pipe maker …….

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°C	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
Et															
Sc															
Sr															
MAWP															

Tensile strength at 20°C.

Where

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

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

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

MAWP = Maximum Allowable Working Pressure in Kg./cm²

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

**The value of Sc and Sr need be furnished only in respect of Pipes 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 pipe has been designed and constructed to comply with the Indian Boiler Regulations for a maximum working pressure of _____ Kg/cm² and maximum temperature of _____ºC and satisfactorily withstood a water test of ____ Kg/cm² on the _____ day of _____ 20___, in the presence of our responsible representative whose signature is appended hereunder.

Maker's Representative Maker _____

(Name and signature) (Name and Signature)

We have satisfied ourselves that the _____ have been constructed in accordance with Indian Boiler Regulations, 1950. The tests conducted on the samples taken from the finished pipes have been witnessed by us and the particulars entered herein are correct.

Name and signature of Competent Person

Name and signature of Inspecting Authority/Well Known Pipe Maker

Place _____

Date _____

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.

Note -(3):—For Stock and sale purpose, one Form shall be issued for not more than five pipes.

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 Form IV shall be noted in the appropriate columns or paragraphs of Raw material in this certificate.".

34. In the said regulations, for Form III-B, the following form shall be substituted, namely:—

"FORM III-B

[See regulation 4(f)]

CERTIFICATE OF MANUFACTURE AND TEST FOR TUBES

Certificate No.---------- Date:—---------

Name of part & Quantity……

Drawing No…….

Maker's Name and Address……..

Customer's Name & Address…….

Design pressure…… Kg/cm²

Design temperature…….. ºC

RAW MATERIAL

Process of manufacture……

Fully killed/rimmed……

Chemical Composition…….

Heat Number……..

Size……

Test Certificate No. & Date……....

Name of the Steel Maker…….

Name of Inspecting Authority…….

TUBES

Process of manufacture……

Main dimensions……..

Tolerances……

Specification……..

Tensile strength……

Chemical Composition……

Elongation percentage…….

Bend test……..

Flattening test……..

Crushing test……

Flare test……..

Flange test……

Other Tests

Heat treatment……

Hydraulic test…… Kg/cm²

Identification mark of Inspecting Authority/Well known tube maker …….

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°C	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
Et															
Sc															
Sr															
MAWP															

Tensile strength at 20°C……

Where

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

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

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

MAWP = Maximum Allowable Working Pressure in Kg./cm²

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

**The value of Sc and Sr need be furnished only in respect of 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 tube has been designed and constructed to comply with the Indian Boiler Regulations for a maximum working pressure of _____ Kg/cm² and maximum temperature of _____ºC and satisfactorily withstood a water test of ____ Kg/cm² on the _____ day of _____ 20___, in the presence of our responsible representative whose signature is appended hereunder.

Maker's Representative Maker _____

(Name and signature) (Name and Signature)

We have satisfied ourselves that the _____ have been constructed in accordance with Indian Boiler Regulations, 1950. The tests conducted on the samples taken from the finished tubes have been witnessed by us and the particulars entered herein are correct.

Name and signature of Competent Person

Name and signature of Inspecting Authority/Well Known Tube Maker

Place _____

Date _____

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.

NOTE-(3):—For Stock and sale purpose, one Form shall be issued for not more than ten tubes.

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 Form IV shall be noted in the appropriate columns or paragraphs of Raw material in this 'certificate.".

35. In the said regulations, for Form III-C, the following form shall be substituted, namely:—

"FORM III-C

[See regulation 4(g)]

CERTIFICATE OF MANUFACTURE AND TEST OF BOILER MOUNTINGS AND FITTINGS

Certificate No. …….. Date:—------

Name of part…

Quantity --------- SL No ……

Drawing No…….

Maker's Name and Address……

Customer's Name & Address……..

Design pressure……..... .kg./cm^2

Design temperature**…**…….. ºC

Metal temperature ºC	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
MAWP															

MAWP = Maximum Allowable Working Pressure in Kg./cm²

Hydraulic test pressure…… .kg./cm^2

Main dimensions……

Specification……

Inspecting Authority's Identification Marks……

Chemical composition…….

Physical test results…….

(i) tensile strength……

(ii) transverse bend test…….

(iii) elongation……

Other Tests……..

RAW MATERIAL

Process of manufacture……

Fully killed/rimmed……

Specification…….

Heat Number……..

Size……

Test Certificate No. & Date……....

Name of the Maker…….

Name of Inspecting Authority…….

Certified that the particulars entered herein by us are correct.

The _____ has been designed and constructed to comply with the Indian Boiler Regulations 1950 for a maximum working pressure of _____ kg./cm^2

and maximum temperature of _____ ºC and satisfactorily withstood a hydraulic test using water or kerosene or any other suitable liquid to a pressure of _____ kg./cm^2 on the _____ day of _____ 20___ in the presence of our responsible representative whose signature is appended hereunder:

Maker Representative MAKER_____

(Name and signature) (Name and Signature)

We have satisfied ourselves and the _____ 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.

Name and signature of Competent Person who witnessed the tests

Name and signature of Inspecting Authority

Place _____

Date _____

Note: (1) In the case of valve chest made and tested by well known Foundries or Forges recognized 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 Form III-F/Form III-G & Form IV, 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.

(2) In case of safety valves, details and test results as required in item No. 8 of Form-III shall also be furnished duly signed by manufacturer and inspecting authority.

(3) For Stock and sale purpose, one Form shall be issued for not more than fifty mountings and fittings.".

36. In the said regulations, Form III-D shall be deleted.

37. In the said regulations, Form III-E shall be deleted.

38. In the said regulations, for Form III-F, the following form shall be substituted, namely:—

"FORM III-F

(See regulations 73 to 80)

CERTIFICATE OF MANUFACTURE AND TEST OF CASTINGS

Certificate No. and date

Heat Number* and date of pouring

Maker's Name and Address …….

Customer's Name and Address ……

Drawing Nos. …….

Description and quantity_____Sl. No. _____

Foundry identification_____

Chemical composition

Heat treatment

Physical test results.

(i) Tensile strength

(ii) Transverse bend test

(iii) Elongation

(iv) Other tests

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)

Maker _____ (Name and Signature)

Name and signature of Competent Person

Name and signature of Inspecting Authority/Well Known foundry

*for castings of size more than 100mm Heat number must be as Cast.".

39. In the said regulations, for Form III-G, the following form shall be substituted, namely:—

"FORM III-G

(See regulations 81 to 85)

CERTIFICATE OF MANUFACTURE AND TEST OF FORGINGS

Certificate No. and date

Heat Number

Details of raw material

Maker's Name and Address …….

Customer's Name and Address ……

Drawing Nos. …….

Description and quantity_____ Sl. No._____

Forge shop identification_____

Chemical composition

Heat treatment

Physical test results.

(i) Tensile strength

(ii) Transverse bend test

(iii) Elongation

(iv) Other tests

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

Maker's Representative Maker _____

(Name and signature) (Name and Signature)

Name and signature of Competent Person

Name and signature of Inspecting Authority/Well Known Forge.".

40. In the said regulations, after Form III-G, the following forms shall be inserted, namely:—

"FORM III-H

(See regulation 4)

CERTIFICATE OF MANUFACTURE AND TEST FOR (HEADERS,DESUPERHEATERS/ATTEMPERATOR,BLOWDOWNTANK,FEEDWATERTANKS, ACCUMULATOR, DEAERATOR)

T.C.NO.: DATE :

Name of the Part :

Maker's Name & Address :

Customer's Name & Address :

Drawing No. : Design Pressure (Kg/cm²) :

Process of Manufacture, Material : Design Temp. (ºC) :

condition, chemical composition, Tensile Strength, Tolerances, Bend Test, Flattening Test etc.	Refer enclosed Raw material Test Certificates or Form IV-A in lieu of Raw material Test Certificates	Heat Treatment	:
		Hydraulic Test Pressure	:
		Non-destructive Testing	:

Inspecting Authority Identification Mark:

Item No.	PART NAME	MATERIAL SIZE	QUANTITY	MELT No.
01	PIPE			
02	END COVER			
03	STUBS			
04	BRANCH PIPES			
05				
06				

Certified that the particulars entered herein are correct.

The parts have been constructed to comply with the Indian Boiler Regulations for a working pressure of **---------** and temperature of **----------**and satisfactorily withstood a water test of **--** on the **--** day of **--** in the presence of our responsible representative whose signature is appended hereunder.

Final Inspection Date :

Signature and Seal of Maker's Representative — Signature and Seal of Maker

Final Inspection Date :

We have satisfied ourselves that the…… have been constructed in accordance with Indian Boiler Regulations, 1950. The tests conducted have been witnessed by us, wherever applicable and the particulars entered herein are correct.

Name and Signature of Competent Person — Name and Signature of Inspecting Authority

Place :

Date :.

"FORM III- I

(See regulation 4)

CERTIFICATE OF MANUFACTURE AND TEST FOR DISHED ENDS/END COVERS

T.C.NO.: DATE :

Name of the Part	:			
Maker's Name & Address	:			
Customer's Name & Address	:			
Drawing No.	:		Design Pressure (Kg./cm²)	:
Process of Manufacture, Material condition, chemical composition, Tensile Strength, Tolerances,	:	Refer enclosed Raw material	Design Temp.(ºC)	:
			Heat Treatment	:

Bend Test, Flattening Test etc.	Test Certificates or Form IV-A in lieu of Raw material Test Certificates	Hydraulic Test Pressure : Non-destructive Testing :

Inspecting Authority Identification Mark:

ITEM No.	PART NAME	MATERIAL SIZE	QUANTITY	SPECN.	MELT No./PLATE NO.	TC NO & DATE
01	PLATE/FORGING					

Certified that the particulars entered herein are correct.

Signature and Seal of Maker's Representative Signature and Seal of Maker

Final Inspection Date :

We have satisfied ourselves that the _____have been constructed in accordance with the Indian Boiler Regulations, 1950. The test conducted have been witnessed by us and the particulars entered herein are correct.

Name and Signature of Competent Pertson

Name and Signature of Inspecting Authority

Place :

Date :".

41. In the said regulations, for Form IV-A, the following form shall be substituted, namely:—

"FORM IV-A

[See regulation 4(c)(iv)]

CERTIFICATE OF MANUFACTURE AND RESULTS OF TESTS IN LIEU OF ORIGINAL TEST CERTIFICATES

It is hereby certified that original Test Certificate contain the following information in respect of the material used in the manufacture of the boiler or components thereof bearing Makers Number …… according to Drawing Number :

Boiler component	*Quantity*	*size*	*Cast/Heat No. Plate No.*	*Steel Making Process*	*Specification*
1	*2*	*3*	*4*	*5*	*6*

Name of Steel Maker/Part Maker	*Certificate No. & Date*	*Heat Treatment*
7	*8*	*9*

% Chemical Analysis CMnPSSi other alloying elements*	*Yield strength (Kg/mm2)*	*U.T.S. (Kg/mm2)*	*Elongation % Gauge Length*	*Bend Test*	*Name of the inspecting authority*
10	*11*	*12*	*13*	*14*	*15*

*(Carbon, Maganese, Phosphorus, Sulpher, Silicon).

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)

Maker _____

(Name and Signature)

Name and signature of

Competent Person

Name and signature of

Inspecting Authority".

42. In the said regulations, for Forms XV-A, XV-B, XV-C, XV-D, XV-E, XV-F and XV-G, the following forms shall be substituted, namely:—

"**FORM XV-A**

[See regulation 4 A (2)]

QUESTIONNAIRE TO BE ANSWERED BY FIRMS/COMPANIES SEEKING RECOGNITION BY THE CENTRAL BOILERS BOARD TO BECOME AN "INSPECTING AUTHORITY"

1. The registered name and address of the company/firm:

2. Address for correspondence:

3. The year in which the company/firm was established.

4. Proposed countries/areas of operation as Inspecting Authority:

5. Is company/firm registered in the proposed countries of operations?

   If so, please give details thereof.

6. Have you any Branch or Associate Office?

   If so, please give their names and addresses.

7. Is company/firm functioning as an Inspecting Authority under the Indian or International codes and standards?

   If so, details thereof.

8. In case of renewal of recognition as Inspecting Authority under the Indian Boiler Regulations, 1950, had you conducted inspection during the last five years?

   If yes, details thereof.

9. Is company/firm involved in any commercial activity other than inspection, certification and related activities under the Indian or International Codes and standards?

   If so, details thereof.

10. Please state the types, size and the range of working pressure of the boilers which you have so far inspected during manufacture 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) Only hydraulic test after the manufacture of the boiler.

11. How many Inspectors/Competent persons have you in your employment? Please give details of the qualifications held by those persons.

12. Have you any Testing Laboratory of your own to conduct all destructive and non-destructive tests required in connection with the manufacture of boilers?

    If so, details thereof.

13. Have you in-house design and drawing inspection office?

    If so, details thereof.

14. Have you any documented quality programme established and maintained to fulfill the inspection requirements as per Indian Boiler Regulations, 1950?

    If so, details thereof.

15. Are you having Curriculum Vitae of all the inspectors/competent persons employed in the organization for inspection and certification work?

16. Are you having a training programme for Inspectors/Competent persons?

If so, details thereof.

17. Are you prepared to conduct the work of Inspection of boilers, economisers and their accessories strictly in conformity with the Indian Boiler Regulations, 1950?

18. Are you prepared to accept full responsibility for the certificate issued by you?

19. Has your request for recognition as an Inspecting Authority been rejected by any Authority? If so, please give details.

20. Are you prepared to issue certificates for the products, you inspect, in the formats of the Indian Boiler Regulations?

21. Are you aware that the recognition is for a period of five years only, which is renewable after every five years on fresh assessment?

SIGNATURE & SEAL

FORM XV-B

[See regulation 4 A (2)]

QUESTIONNAIRE FOR ELICITING INFORMATION REGARDING THE COMPETENCY OF A FIRM/COMPANY TO BE RECOGNISED AS "COMPETENT AUTHORITY"

1. Registered name and address of the company/firm.
2. Address for correspondence.
3. Year in which the company/firm was established.
4. Address of branch or associate office, if any.
5. Principal work of the company/firm.
6. Does the company/firm have any training section for the welders? If so, details of the scheme to be stated.
7. Does the company/firm 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 company/firm prepared to undertake testing of welders employed by other organisation?
10. In case of renewal of recognition as Competent Authority under the Indian Boiler Regulations, 1950, have you undertaken inspection and certification of welders during the last five years?

    If yes, details thereof.

11. Whether the company/firm is prepared to conduct tests as per requirements of the Indian Boiler Regulations, 1950?
12. The amount of fee which the company/firm would charge from 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:
13. Is the company/firm prepared to examine and issue certificate to welders in accordance with the requirements of the Indian Boiler Regulations, 1950?
14. Is the company/firm prepared to take full responsibility for certificates issued by it.

15. Are you aware that the recognition is for a period of five years only which is renewable after every five years on fresh assessment?

SIGNATURE & SEAL

FORM XV-C

[See regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY STEEL MAKER SEEKING RECOGNITION BY CENTRAL BOILERS BOARD TO BE NOTIFIED AS "WELL KNOWN STEEL MAKERS"

1. Registered Name and address of the firm/company:
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/company acceptable to the other organisations of the country? If so, by whom?
13. Is the firm/company prepared to conduct tests in accordance with the Indian Boiler Regulations, 1950?
14. Is the firm/company recognised as "Well Known Steel Maker" in any other country?
15. Whether the firm/company has any previous experience to produce steel in accordance with the provision of Indian Boiler Regulations, 1950 under the inspection of any recognised Inspecting Authority.
    If yes, details thereof.
16. Whether the firm/company is prepared to furnish certificates under the provision of Indian Boiler Regulations, 1950.
17. In case of renewal of recognition, had you manufactured and supplied steel as "Well Known Steel Maker" under the Indian Boiler Regulations, 1950 during the last five years?
    If yes, details thereof.
18. Whether the firm/company manufacture steel from the ore itself or from ore and scrap or scrap only:
19. 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.
20. Are you aware that the recognition is for a period of five years only which is renewable after every five years on fresh assessment?

SIGNATURE & SEAL

FORM XV-D

[See regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY FOUNDRY/FORGE SEEKING RECOGNITION BY CENTRAL BOILERS BOARD TO BE NOTIFIED AS "WELL KNOWN FOUNDRY/FORGE"

1. The registered name and address of the firm/company:
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 the firm/company:
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:
11. Types of test conducted:
12. If so, by whom conducted?
13. Are the tests conducted by the firm/company itself acceptable to the other organisations of the country? If so by whom?
14. Is the firm/company prepared to conduct tests in accordance with the Indian Boiler Regulations, 1950?
15. Is the firm/company recognised as "Well Known Foundry/Forge" in any other country?
16. Whether the firm/company is in a position to produce forgings/casting in accordance with any national/international specifications fulfilling the minimum requirements of Indian Boiler Regulations, 1950:
17. Whether the firm/company has any previous experience to produce forgings/castings in accordance with the provision of Indian Boiler Regulations, 1950 under the inspection of any recognised Inspecting Authority.

    If yes, details thereof.
18. Whether the firm/company is prepared to furnish certificates under the provision of Indian Boiler Regulations, 1950.
19. In case of renewal of recognition, had you manufactured and supplied castings/forgings as "Well Known Foundry/Forge" under the Indian Boiler Regulations, 1950 during the last five years?

    If yes, details thereof.
20. Whether the firm/company is agreeable to show their process of manufacture, in-house testing facilities to a team of members appointed by Central Boilers Board.
21. Are you aware that the recognition is for a period of five years only, which is renewable after every five years on fresh assessment?

SIGNATURE & SEAL

FORM XV-E

[See regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY TUBE/PIPE MAKER SEEKING RECOGNITION BY CENTRAL BOILERS BOARD AS "WELL KNOWN TUBE/PIPE MAKER"

1. Registered name and address of the firm/company:
2. Works address:
3. The year in which the factory was established:
4. Capacity of production of Tube/Pipe and the tonnage details per during the last three years:
5. Steel grades of Tube/Pipes under production:
6. Size range of Tubes/Pipes under production:
7. Process of manufacture of Tube/Pipes:
8. (a) Whether the firm/company is producing the raw material or purchasing the raw material.

   (b) If the raw material is purchased, give the details of purchase in last three years.

      i. from well known steel makers under Indian Boiler Regulations, 1950.

      ii. from other sources.
9. If purchase is as per 8(b)(ii), state whether the raw material is tested at Tube maker's/Pipe maker's premises under Indian Boiler Regulations, 1950.

10. If the firm/company is producing raw material, state whether the firm/company is recognised as Well Known steel maker under Indian Boiler Regulations, 1950.

11. Major manufacturing facilities available with the firm/company:

12. Testing facilities available with the works:

13. Types of tests conducted on Tubes/Pipes (enclose complete quality control plan from raw material stage to finished stage along with the quality control and inspection personnel of the firm):

14. The details of failures and rejection

    (a) By Non-Destructive Testing (NDT)

    (b) By Destructive Testing.

15. Whether the firm/company is in a position to manufacture Tubes/Pipes and also provide for their necessary testing facilities in accordance with the provision in Indian Boiler Regulations, 1950.

16. Whether the firm/company has any previous experience to produce Tubes/Pipes in accordance with the provision of Indian Boiler Regulations, 1950 under the inspection of any recognised Inspecting Authority.

    If yes, details thereof.

17. Whether the firm/company is prepared to furnish certificates under the provision of Indian Boiler Regulations, 1950.

18. In case of renewal of recognition, had you manufactured and supplied Tubes/Pipes as "Well Known Tubes/Pipes Maker" under the Indian Boiler Regulations, 1950 during the last five years?

    If yes, details thereof.

19. The name of the firms to whom the firm/company has supplied Tubes/Pipes:

20. Whether the firm/company is agreeable to show their manufacturing process and in-house facilities to a team consisting of three members appointed by the Board.

21. Whether the firm/company is aware of the fact that the recognition is for a period of five years only, which is renewable after every five years term on fresh assessment?

SIGNATURE & SEAL

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"

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, 1950?

13. Whether you have any previous experience of conducting tests in accordance with the provision of Indian Boiler Regulations, 1950 under the inspection of any recognised Inspecting Authority.

    If yes, details thereof.

14. In case of renewal of recognition, had you conducted tests under the provisions of Indian Boiler Regulations, 1950 during the last five years?

    If yes, details thereof.

15. Are you agreeable to show your laborato and in-house facilities to a team consisting of three members appointed by the Board?

16. Are you aware that the recognition is valid for a period of five years only, which is renewable for five years on fresh assessment?.

SIGNATURE & SEAL

FORM XV-G

[See regulation 4A (2)]

QUESTIONNAIRE TO BE ANSWERED BY A FIRM SEEKING RECOGNITION BY CENTRAL BOILERS BOARD AS "REMNANT LIFE ASSESSMENT ORGANISTION" UNDER REGULATION 391A

1. The registered name and address of the firm/company :
2. Address of the firm/company :
3. The year in which the firm/company was established :
4. (a) Whether the firm/company 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/company:
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, 1950? :
13. In case of renewal of recognition, had you conducted Remnant Life Assessment of Boilers and Boiler parts under the Indian Boiler Regulations, 1950 during the last five years? :

    If yes, details thereof.

14. Are you agreeable to show your laboratory and in-house facilities to a team consisting of three members appointed by the Board? :
15. Are you aware that the recognition is valid for a period

of five years only, which is renewable for five years on fresh assessment. :

SIGNATURE & SEAL".

43. In the said regulations, for Forms XVI-A, XVI-B, XVI-C, XVI-D, XVI-E, XVI-F, XVI-G, XVI-H and XVI-I, the following forms shall be substituted, namely:—

"**FORM XVI-A**

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 for operation in

_____

This certificate is valid for five years, i.e. upto……..

_____

Validity is subject to the adherence to the quality Control prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-B

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 for operation in

_____ _____

This certificate is valid for five years, i.e. upto……..

_____

Validity is subject to the adherence to the quality Control prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-C

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 _____

_____

for their factory at_____

_____

_____

_____

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

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-D

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 for the manufacture of

_____

for their factory at_____

_____

_____

_____

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

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Approval Certificate No._____

_____

Secretary

FORM XVI-E

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 for the manufacture of

_____

for their factory at _____

_____

_____

_____

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

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations,1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-F

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 _____

_____

for their factory at_____

_____

_____

_____

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

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-G

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 _____

_____

for their factory at _____

_____

_____

_____

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

Validity is subject to the adherence to the quality control prescribed under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-H

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

CENTRAL BOILERS BOARD

CERTIFICATE OF APPROVAL AS WELL-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 five years, i.e. upto_____

_____

Note:— The recognition will be as per the standards specified under the provisions of the Indian Boiler Regulations, 1950.

_____

Date of Issue

Certificate No._____

_____

Secretary

FORM XVI-I

[See regulation 4C (2)]

NATIONAL EMBLEM

Serial No. File No.

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 five years, i.e. upto_____

_____

Date of Issue

Certificate No._____

_____

Secretary".

44. In the said regulations, in Form XVII, for the heading "CERTIFICATE OF MANUFACTURE AND TEST FOR SMALL INDUSTRIAL BOILERS", the following heading "CERTIFICATE OF MANUFACTURE AND TEST FOR SMALL INDUSTRIAL BOILERS INCLUDING SMALL INDUSTRIAL SOLAR BOILERS" shall be substituted.

45. In the said regulations, for Form XVIII, the following form shall be substituted, namely:—

"FORM XVIII

[See regulation 392(4)]

QUESTIONNAIRE FORM FOR REPAIRER OF BOILERS/ECONOMISER/STEAM LINE/FEED WATER LINES

1. (a) Registered name of the firm and its permanent address ……

(b) Address of the workshop:

2. Year of establishment ……..

3. Classification applied for—

(a) Special Class (For any Boiler Pressure)

(b) Class I (For Boiler Pressure upto 125 kg.cm2)

(c) Class II (For Boiler Pressure upto 40 kg./cm2)

(d) Class III (For Boiler Pressure upto 17.5 kg/cm2)

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. (a) Whether the firm has ever been approved by any Boilers' Directorate/Inspectorate? If so, give details ...……

(b) Has your request for recognition as a repairer under Indian Boiler Regulations, 1950 been rejected by any Authority? If so, please 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 designation, educational qualifications and relevant experience (attach copies of documents) who are permanently employed with the firm ……..

8. How many 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. List of welders employed with copies of current certificate issued by a Competent Authority under the Indian Boiler Regulations, 1950.

……

Date ……. *Name & Signature of the authorised signatory*

Place …….. *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.

Note 2: In case the repairer is found violating the provisions of the Act or 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.".

46. In the said regulations, for Form XIX, the following form shall be substituted, namely:—

"FORM XIX

[See regulation 376(ff) and 376(fff)]

DETAILS TO BE FURNISHED ALONGWITH APPLICATION FOR INSPECTION OF BOILER AFTER TWELVE/TWENTY FOUR MONTHS OF THE CERTIFICATION UNDER REGULATION 390 AS PER APPENDIX 'JA' AND APPENDIX 'JB'

1. Name and address of the owner ……

2. Registry number of the boiler ……

3. Steam pressure and temperature ……

4. Rate of steam generation ……

5. Heating surface ……

6. Year of make ……

7. Brief description of boiler ……

8. Type of construction (Whether riveted or welded) ……

9. Whether fired or waste heat boiler ……

10. Date of registration ……

11. Details of past exemption granted by the Government, if any ……

12. Date of last annual inspection ……

13. Expiry date of current certificate ……

14. Working pressure at which last certificate was issued ……

15. Details of past repairs (year-wise) ……

16. Remark as entered in the last certificate ……

17. Quality of boiler feed water ……

18. Whether requisite number of feed pumps are in satisfactory working condition at present? ……

19. Number of safety valves mounted on shell/drum and super heater……

20. Total number of soot blowers provided in boiler ……

21. Number of soot blowers in working condition ……

22. Whether safety valves are blowing satisfactorily at or below design pressure?……

23. Whether safety valve assembly is free from jamming as verified by operating casing lever? ……

24. Whether high and low water level alarm is in good condition? ……

25. Whether main steam stop valves, feed check valves, blow down valves and master pressure gauge in working condition? ……

26. Whether additional requirements for automatic boilers as per regulation 281A are complied with? (If 'No', give details) ……

27. Last date of calibration for master pressure gauge, temperature indicator/ recorder for superheater, hot reheat, cold reheat and main steam line. ……

28. (a) Last date when boiler protection devices were satisfactorily tested and details thereof ……

(b) Last date when boiler protection devices were tested by simulation……

29. Details of boiler stoppages in last twelve months with reasons and remedies thereof. ……

30. Present irregularities in instruments and controls if any observed in control-room of boiler house. ……

31. Details of present boiler leakage. ……

32. Present operating pressure of the boiler. ……

33. Whether water quality is tested on-line (enclose copy of test report showing values of analysis including Total Dissolved Solids(TDS) ……

34. State at what intervals such test is carried out ……

35. When boiler was last opened for internal and/or external cleaning? ……

36. State at what intervals such cleaning is carried out. ……

37. Whether there was any shut down since last inspection when the boiler could have been offered for inspection? …..……..……

38. Whether working pressure of the boiler ever exceeded in the past beyond certified limit? If any, give details …..…….

39. Details of boiler accident which took place in the past, if any ……

40. List of Boiler Operation Engineers/Attendants. ……

41. Irregularities, if any, noticed in the past in compliance of the Act……..…

42. Whether guidelines laid down by Central Boilers Board for granting exemption to the waste heat boilers are fulfilled or not? ……..……

General Manager (Generation)

Remarks of the Competent Person who verified correctness of above statement paying check visit to the Boiler House.

Competent Person".

47. In the said regulations, for Appendix JA, the following Appendix shall be substituted, namely:—

"APPENDIX JA

[See regulation 376(ff)]

A. Power Boilers working at a pressure above 100 kg/cm² and up to 100,000 hours of operations.

(1) The boilers working at a pressure above 100 kg/cm² and up to 100,000 hours of operations, generating steam for power generation shall be inspected as detailed below after the expiry of twelve months from the date of inspection carried out in accordance with the procedure provided in regulation 390 and certification of fitness shall be issued by the concerned Competent Person in the State, through inspection of the following records which shall be made available alongwith application in Form XIX duly filled in to the concerned Competent Person at least thirty days before the expiry of the operating certificate, provided he is satisfied that the boiler can be allowed to be operated for a further period of twelve months.

(a) Operation data for superheater and reheater temperature excursions from the output of Data Acquisition System (DAS).

(b) History of shut downs during the previous year with their causes and actions taken.

(c) Records of any Non-Destructive test carried out on the boiler pressure parts during the year.

(d) Water quality to the boiler is maintained up to the requirement of such boilers and on line data of the quality be provided.

(e) Boiler tube failure record (location, number of tubes repaired/replaced).

(2) Inspection shall be carried out by the concerned Competent Person at the expiry of twenty-four months as provided in regulation 390. However, in case shutdown of fifteen days or more any time before expiry of the certification period and after six months of the certification, the Competent Person shall be duly informed so that inspection can be scheduled during the said shut down period.

B. Power boilers working at a pressure up to 100 kg/cm² and up to 100,000 hours of operations or 25 years of operations as applicable.

(1) The boilers working at a pressure up to 100 kg/cm² and up to 100,000 hours of operations for boiler operating above 400ºC and 25 years of operation for boilers operating less than 400ºC generating steam for power generation shall at the expiry of twelve months from the date of inspection carried out in accordance with the procedure provided in regulation 390 and certification of fitness by the concerned Competent Person in the State, and having satisfied with the operation records at paragraph A, shall be allowed for running for another period of twelve months.

(2) Inspection shall be carried out by concerned Competent Person at the expiry of twenty-four months as provided in regulation 390. However, in case of shutdown of fifteen days or more any time before expiry of the certification period and after six months of the certification, Competent Person shall be duly informed so that inspection can be scheduled during the said shut down period.

C. Power boilers working at a pressure above 100 kg/cm² and more than 100,000 hours of operations.

(1) Boiler working at a pressure above 100 kg/cm² and more than 100,000 hours of operations, generating steam for power generation shall continue to be subject to inspection as provided in regulation 390 every year to the satisfaction of concerned Competent Person in States. However, if Remnant Life Assessment (RLA), as per provisions in these regulations is carried out on the boiler and if found satisfactory, then procedure as per paragraph "A" above shall be applicable.

(2) Inspection shall be carried out by the concerned Competent Person at the expiry of twenty-four months as provided in regulation 390. However, in case of shut down of fifteen days or more any time before expiry of the certification period and after six months of the certification, Competent Person shall be duly informed so that inspection can be scheduled during the said shut down period.

D. Power boilers working at a pressure up to 100 kg/cm2 and more than 100,000 hours of operations or twenty-five years of operations as applicable.

(1) Boiler working at a pressure up to 100 kg/cm2 and more than 100,000 hours of operations for boiler operating above 400ºC and twenty-five years of operation for boilers operating less than 400ºC, shall continue to be subjected to inspection every year as provided in regulation 390. However, if Remnant Life Assessment (RLA), as per provisions in these regulations is carried out on the boiler and if found satisfactory, then procedure as per paragraph "B" above shall be applicable.

(2) Inspection shall be carried out by the concerned Competent Person at the expiry of twenty-four months as provided in regulation 390. However, in case of shut down of fifteen days or more any time before expiry of the certification period and after six months of the certification, Competent Person shall be duly informed so that inspection can be scheduled during the said shut down period.

Note: Wherever High Pressure (HP) and Low Pressure (LP) boilers operate from the same enclosure, the procedure for inspection as applicable to High Pressure (HP) boiler shall also be applicable to Low Pressure (LP) boiler.".

48. In the said regulations, for Appendix JB, the following Appendix shall be substituted, namely:—

"**APPENDIX JB**

[See regulation 376(fff)]

A. Waste Heat Boilers (Fired)/CO-boilers working at a pressure up to 50 Kgs./cm2 and up to twenty years of age used exclusively in continuous process plant.

(1) For Waste Heat Boilers (Fired)/CO-boilers working at a pressure upto 50 Kgs/cm2 and up to twenty years of age used exclusively in continuous process plant, at the expiry of twelve months and at twenty four months from the date of inspection carried out in accordance with the procedure provided in regulation 390 and certification of fitness issued by the concerned Competent Person in the State, and having satisfied with the operation records as given below received alongwith application in Form XIX duly filled in shall be allowed for running for another period of twelve months:—

(a) Operation data for superheater and reheater temperatue excursions from the output of Data Acquisition System (DAS);

(b) History of shut downs during the previous year with their causes and actions taken;

(c) Records of any Non-Destructive test carried out on the boiler pressure parts during the year;

(d) Water quality to the boiler is maintained as per the requirement of such boilers and on line data of the quality be provided through Data Acquisition System (DAS);

(e) Boiler tube failure record (location, number of tubes repaired/replaced).

(2) Inspection shall be carried out by the concerned Competent Person at the expiry of thirty six months as provided in regulation 390. However, in case of shutdown of fifteen days or more any time before expiry of the certification period and after six months of the certification, Competent Person shall be duly informed so that inspection can be scheduled during the said shutdown period.

B. Waste Heat Boilers (Unfired) working at a pressure up to 50 kgs./cm2 and up to twenty years of age used exclusively in continuous process plant.

(1) For Waste Heat Boilers (Unfired) working at a pressure up to 50 kgs./cm2 and up to twenty years of age used exclusively in continuous process plant, at the expiry of twenty four months from the date of inspection carried out in accordance with the procedure provided in regulation 390 and certification of fitness by the concerned Competent Person in the State, and having satisfied with the operation records at paragraph "A", shall be allowed for running for another period of twenty-four months.

(2) Inspection shall be carried out by the concerned Competent Person at the expiry of forty-eight months as provided in regulation 390. However, in case of shutdown of fifteen days or more any time before expiry of the certification period and after six months of the certification, Competent Person shall be duly informed so that inspection can be scheduled during the said shutdown period.

C. Waste Heat Boilers (Fire and Unfired)/CO-Boilers working at a pressure up to 50 Kgs./cm2 and more than twenty years of age used exclusively in continuous process plant.

Boiler working at a pressure up to 50 Kgs/cm2 and more than twenty years of age shall continue to be subjected to inspection as provided in regulation 390 every year to the satisfaction of concerned Competent Person in the State. However, if Remnant Life Assessment (RLA) as per the provisions of these regulations is carried out on the boiler and if found satisfactory, then procedure as given at paragraph 'A' or paragraph 'B' above as applicable shall be followed.

D. Captive Boilers/Waste Heat Boilers (Fired)/HRSGs working at a pressure more than 50 kgs./cm2 and up to twenty years of age used exclusively in continuous process plant.

(1) The Captive Boilers/Waste Heat Boilers (Fired)/HRSGs working at a pressure 50 Kgs./cm2 or more and up to twenty years of age, used exclusively in continuous process plant shall be inspected as detailed below after the expiry of twelve months and at twenty four months from the date of inspection carried out in accordance with the procedure provided in regulation 390 and certification of fitness shall be issued by the concerned Competent Person in State, through inspection of the following records which shall be made available alongwith application in Form XIX duly filled in to the Competent Person at least thirty days before the expiry of the operating certificate, provided he is satisfied that the boiler can be allowed to be operated for a further period of twelve months:

(a) Operation data for superheater and reheater temperature excursions from the output of Data Acquisition System (DAS);

(b) history of shut-downs during the previous year with their causes and actions taken;

(c) records of any Non-Destructive test carried out on the boiler pressure parts during the year;

(d) water quality to the boiler is maintained up to the requirement of such boilers and on line data of the quality be provided through Data Acquisition System (DAS);

(e) boiler tube failure record (location, number of tubes repaired/replaced).

(2) Inspection shall be carried out by the Competent Person at the expiry of thirty six months as provided in regulation 390. However, in case shutdown of fifteen days or more any time before expiry of the certification period and after six months of the certification, the Competent Person shall be duly informed so that complete inspection can be scheduled during the said shut-down period.

E. Captive Boilers/Waste Heat Boilers (Fired)/HRSGs working at a pressure more than 50 kgs./cm2 and more than twenty years of age used exclusively in continuous process plant.

Boiler working at a pressure of more than 50 kg./cm2 and more than twenty years of age shall continue to be subjected to inspection as provided in regulation 390 every year to the satisfaction of concerned Competent Person in State. However, if Remnant Life Assessment (RLA) as per the provisions of these regulations is carried out on the boiler and if found satisfactory, then procedure as given at paragraph 'D' above would be applicable.".

[F. No. 6(4)/2014-Boilers]

T. S. G. NARAYANNEN, Secretary, Central Boilers Board

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