

BHARAT HEAVY ELECTRICALS LIMITED
MM / RM / PURCHASE / C&F
BHEL / TRICHY-620 014.

ANNEXURE-A
Open tender

Dt.15.05.2018

Enquiry Terms & Conditions for Supply of P91-Hemispherical Dished Ends

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

Any deviation to the below mentioned terms shall be stated specifically in the comments column for each term and also in case of acceptance to our terms, it will be construed that the whole term is understood and agreed in totality without any deviation. (If otherwise mentioned).

Sl No	BHEL Requirements	Supplier Comments
01	<u>Material specification:</u> Supply Hemispherical Dished Ends shall be made strictly as per Specifications, Drawings and TDC as mentioned in the enquiry.	
02	<u>Specification, Size & Quantity:</u> a) All the Hemispherical Dished Ends are to be supplied fully meeting the applicable TDC 423/09, Drawings. If there is any deviation, the same should be mentioned clearly in the offer itself. b) Size shall be as per BHEL drawings and tolerance on ID & OD shall be maintained throughout the surface as per Drawing. c) TC in FORM IIC, works TC, Raw Material TC, UT report, LPI report and other test certificates as called in TDC 423/09 shall be sent along with supply. d) Before start of production the manufacturer shall be submit a Manufacturing and Inspection Plan (MIP) to BHEL product QA for approval (Being a New Supplier). e) Supply of Hemispherical Dished Ends shall be as per latest IBR amendment dt.15.04.15. f) Inspection by authorized inspection agency as listed in the annexure enclosed. g) Ends shall be protected with suitable End covers. h) Quantity shall be as given in enquiry.	
03	<u>Offer Submission:</u> ➤ Offer is to be submitted in TWO part bids system (Technical bid + Price bid) in the E-Procurement portal. Scan copy of the filled Annexure-A, Tender documents etc., shall be uploaded in the EPS portal. ➤ The offer is to be submitted within 2.00 P.M on or before the due date. ➤ After the scrutiny of technical bids, price bids of only techno-commercially qualified offer shall be opened with prior intimation.	
04	<u>Authorization for participation in EPS portal through DSC:</u> i) <u>E-Tender Participation requirements</u> Either Principal or authorized agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT-SIGNING & ENCRYPTION). Suppliers are advised to go through the FAQ available in the web portal	

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	<u>(www.bhel.abcpurchase.com)</u>. DSC shall be registered for the authorized person and all transaction done using that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally. ii) For foreign Principal In case of Principal (being foreigner), they may apply for DSC through Indian embassy at their country and can register with us for participating in E-tenders. Details of the applicable procedure is available in the webpage http://www.cca.gov.in/cca/. iii) For Indian agent In case of agents participating/registering their DSC (of authorized person), it will be at the sole authorization of principal to their agents to participate on their behalf and all transactions done using that DSC against our tenders shall be known as valid communication and shall binding on principal and is legally valid.	
05	Validity: 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.	
06	Delivery: The offer shall clearly indicate delivery period in fixed number of weeks/Months from the date of Purchase Order.	
07	Goods and Service Tax (GST) Indigenous suppliers: - Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration no which should clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer. Supplier shall mention the HSN code for each item quoted by them in the offer. - Supplier shall mention their GSTN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc. - All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code). - A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL. - All documents like Mill Test Certificate, LR copy, Guarantee/Warrantee certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so. - In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the supplies, within the calendar month notified by BHEL. - For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills. Import Suppliers: - Supplier shall mention the HSN code of the each item quoted by them in the offer. The HSN shall be mentioned in the Invoice also for each item without fail.	

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Terms of Delivery :**A. INDIGENOUS:**

- a) Bidders should submit their offer for FOR Destination -BHEL Stores, Trichy. The quote should be inclusive of all charges, including testing, packing & forwarding, inspection, Insurance etc. Ex-Works and other terms of delivery will not be considered.
- b) The soft copies of the Invoice, LR copy & Test certificates shall be forwarded to BHEL immediately after dispatch.

B. IMPORTS:

- Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LIFO – Liner in Liner Out) basis.
- Port of loading should be indicated without fail.
- Port of discharge should be Chennai.
- The preferred shipment mode “Containerized Cargo” shall be specified clearly in the offer.

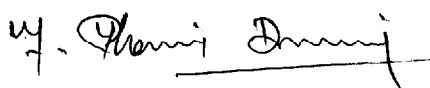
FOR CFR INCO TERMS – CONTAINERIZED CARGO

- a.) I) Indian Customs has imposed a penalty on late filing of Bill of Entries (Air/Sea Shipments) by the importer. The maximum free time allowed is 24 hrs from the time of arrival of cargo at final port of discharge. At present penalty is Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter).
- b.) Hence the supplier shall submit the Non-Negotiable Documents (Bill of Lading, Commercial Invoice, Packing List, Certificate of Origin, etc.) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge.
- c.) In case of any penalty due to late filing of Bill Of entry for reasons attributable to suppliers (as listed below), the same will be recovered from the bills of supplier:
 - d.) a. Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival
 - b. Discrepancy in documents
 - c. Short landing of Consignments (For shipments on CFR – Chennai Port)
- e.) II) All the shipments for the contracts (POs) finalized on CFR -Chennai Port basis
- f.) Delivery Orders involving multiple agencies like liners/freight forwarders are not allowed. To avoid any delay, BHEL prefers Single agency office at the final discharge Port (Chennai) for issuing the Delivery Order to BHEL.
- g.) The detention/demurrage charges arises due to the delay in collection of Delivery Orders from multiple agencies of liner/freight forwarder also whose offices are not at available Chennai, the same amount will be deducted from Vendor's bills only.
- h.) Apart from the Terminal Handling Charges, Container cleaning Charges & Delivery Order Charges at final port of discharge, any other charges will not be borne by BHEL.
- i.) The liner/freight forwarders shall be informed by the Vendor not to claim any additional charges (like charges listed below) for issuing Delivery Order. In case if the liner/freight forwarder claims such charges, the same amount will be deducted from the Vendor bills with/without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden charges are listed below.
 - a. CIC - Container Imbalance Charges/Surcharges
 - b. EIC - Equipment Imbalance Charge/Surcharges
 - c. CAF - Container/Currency Adjustment Factor
 - d. BAF - Bunker adjustment Factor
 - e. RDS - Rupee Depreciation Surcharge
 - f. CDS - Currency Depreciation Surcharge

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Transport Conditions for Import:

The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment.



	a. In the event of delayed submission of documents by the supplier, an amount up to 5% of the invoice value will be retained towards demurrage & other charges and the difference if any between actual charges and recovery will be settled separately through supplementary invoice. b. In such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading". c. Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading. d. This is required to ensure avoidance of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller.	
10	Payment terms: A. Indigenous: i) BHEL Payment term is 100% direct EFT payment after 45 days from the date of receipt and acceptance of materials. ii) The duplicate copy of the invoice meant for the transporters should accompany the material as stipulated under C.E. rules 52a and 173c (or) 57gg. A Photostat copy of the above invoice for each Delivery Challan should be submitted along with the original bills routed through bank or submitted directly to BHEL finance department. iii) 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. iv) Offers of indigenous Suppliers with payment terms as LC / Advance Payment and payment through bank are liable for rejection. B. Imports: i) 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. ii) Vendors supplying for first time to BHEL (not supplied any material earlier), the payment will be made after 45 days of receipt and acceptance of materials at BHEL store. (In case of foreign supplier, quoting for LC payment, first lot of mutually agreed quantity shall be supplied with payment as CAD basis after 45 days from the date of receipt & acceptance of material after testing at our Lab. After acceptance of first lot, LC may be opened for the remaining lot). iii) 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. iii) If the LC payment is insisted, TWO sets of original TCs to be submitted prior to dispatch and a certificate to that effect from BHEL should form a part of the documents to be negotiated. If this condition is not complied by the vendor, the offer is liable for rejection. Note: LC will be opened one month prior to material readiness. Hence supplier shall intimate the material readiness accordingly for opening of LC. LC validity period will be 90 days and for any extension, applicable charges will be to supplier's account. ➤ In the case of Usance LC with 45 days credit, the loading will be considered @ 1.5% on the offered Value. Due date for payment will be considered from the date of receipt of documents at BHEL bank, as specified in PO. ➤ For LC at sight the loading will be considered @ 3.5% on the offered Value. ➤ Normally CAD at sight and Confirmed LCs are liable for rejection.	

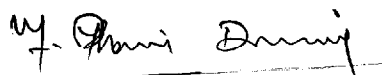
11	<u>Liquidated Damage (Indigenous & Imports):</u> - LD shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value. - For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value. (Not Applicable to this tender) - 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). (If LD is not accepted on total order value, loading of 10% on the offered value will be done). - Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number. a) IMPORT: For CFR terms, BL date will be considered for LD calculation. b) INDIGENOUS: For "FOR Delivery terms", Lorry way bill date will be taken for LD calculation.	
2	<u>Risk Purchase clause :</u> 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. Confirm your acceptance.	
13	<u>Performance Bank Guarantee :</u> 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% of the contract value. 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. PBG shall be strictly as per BHEL format and to be submitted before the dispatch/shipping of the materials.	
14	<u>Warrantee / Guarantee:</u> 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.	
15	<u>Non-Disclosure Agreement(NDA):</u> The bidders shall enter into the Non-disclosure agreement totally voluntarily, with full knowledge of its meaning and without duress. (Format attached).	
16	<u>Patent Right:</u> The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.	

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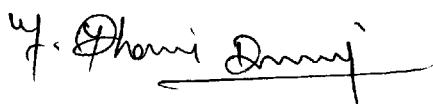
17	<u>Comprehensive Economic Partnership Agreement (CEPA):</u> Foreign suppliers shall ensure that the benefits as applicable under comprehensive economic partnership agreement (CEPA) with government of India are disclosed in the bid and relevant documents such as certificate of country of origin, issued by the appropriate authority in the country of exports, is provided by the vendor along with dispatch documents. Bids shall be evaluated with such applicable benefits. In the event of seller failing to provide appropriate documents for purchasers to avail disclosed concessional duty benefits in India, financial loss, so incurred, will be to the seller's account.	
18	<u>Role of Agents:</u> a. BHEL's strongly discourages the engagement of Agents in India by foreign principals, to deal with BHEL, in BHEL's tenders. a. BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL. Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM. Hence in their own interests, prospective tenderers may check with BHEL. The list of banned firms is available on BHEL website www.bhel.com. In view of the requirement of BHEL, it is strongly suggested that in their own interest, foreign principals may desist from engaging any Indian agent and deal with BHEL directly and it is stressed that any Main producer proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk. BHEL shall in no way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions of their Indian agent.	
19	<u>Agency Commission :</u> ➤ In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India, shall invariable be shown separately in the Performa invoice and this will be paid by us in India, in Indian rupees, on satisfactory completion of the contract. ➤ It overseas principal has any tie-up with any third party in respect of agency commission it should be declared while submitting offers. ➤ Copies of current agency agreement / authorization letter in respect of agency commission shall be furnished along with offer, if not made available earlier. ➤ For calculation of rupee equivalent agency commission, exchange rate as prevailing on the date of order will be taken.	
20	<u>Evaluation Criteria:</u> The offers of both import vendors and indigenous vendors will be evaluated on total landed cost to BHEL, Trichy. The evaluation details with respect to the import & indigenous vendors is detailed below: I) <u>Indigenous Vendors:</u> Total Landed cost = FOR Rate in INR (A) + Applicable Taxes (B) + Loading for payment term & LD (C) – Applicable input tax credit (D) A. Indigenous vendors submit offers on Free on Road (FOR), Trichy in INR. B. (SGST, CGST, UGST & IGST) on (BASE PRICE+GST) and any other charges quoted by indigenous vendors will be added to the base price. C. Loading for payment terms & non-acceptance of Liquidated Damages (LD) will be added to the FOR value for arriving the landed rate. D. However input credit is availed for GST taxes, hence the same is excluded for arriving at the landed cost. II) <u>Import Vendors:</u> Total Landed cost = CFR Rate in INR (A) + Applicable Duties (B) + Incidental Charges (C) + Loading for Container Shipment (D) + Loading for payment term & LD (E)	

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	A. Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILO – Liner In Liner Out) basis in foreign currency, which will be converted to INR by multiplying with the Exchange rate (SBI TT Selling rate) as on the technical bid opening date. B. Customs duty, Safe guard duty (as per the notification No 02/2014-Customs (SG) dated 13th August 2014) and antidumping duty (as per the notification No 18/2016-Customs (ADD) dated 17.05.2016) as applicable will be added to the INR price. C. Incidental charges of 2.2% will be added to the CFR Value. The incidental charge is inclusive of Insurance, port handling charges, & freight charges for movement from Chennai port to BHEL, Trichy. D. In case of shipment through containers, If 14 free days for Container detention is not provided in the offer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost. E. Loading for payment terms & Non-acceptance of Liquidated Damages (LD) will be added to the CFR value for arriving at the landed cost.	
21	<u>General condition:</u> a) In addition to TCs in relevant IBR forms corresponding mill TCs should also be provided along with dispatch of Hemispherical Dished Ends. Two sets of original and one copy of all such TCs are to be provided to BHEL, Trichy. b) Material is to be inspected by third party inspection agency as approved by IBR and test certificate are to be countersigned by respective Inspection agency in case the Mill is not approved by IBR. c) We require the shipment of the Dished Ends to be as per the dates mentioned against the individual items in the enquiry. d) No revision of prices will be entertained after the tenders are opened. e) For the evaluation purposes, exchange rate (TT selling rate of SBI) as on schedule date of tender opening (Part I, i.e technical bid, in case of two part bid) shall be considered. f) BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed. g) Lowest price received against BHEL tenders need not be the technically acceptable one and in that case, BHEL reserves the right not to consider the same. h) 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. i) In the event of our customer order covering this tender being cancelled / placed on hold / otherwise modified, BHEL would be constrained to accordingly cancel / hold / modify the tender / your purchase order at any stage of execution. j) Offer will be evaluated based on Landed cost to BHEL- Trichy on item basis. k) No payment will be made for the excess quantity. l) Offer should be submitted only as per the Unit of Measurement (UOM) specified in the enquiry. m) The offers of the bidders who are on the banned list as also the offer of bidders who engage the services of the banned firms, shall be rejected. The list of banned firms is available on the BHEL website - www.bhel.com. n) Documents not signed and stamped by the authorized signatory of the bidder shall not be accepted and considered for registration / evaluation of the bid etc.	

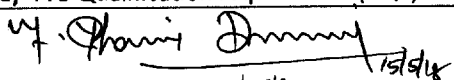


	o) Any additional documents submitted by supplier / bidder, during processing of registration application / tender or after placement of order, shall not be accepted unless it is submitted with forwarding letter and duly signed and stamped as mentioned above. p) BHEL may consider extending the due date/s for the tender openings. Sufficient notice would be given by BHEL for such extensions and it will be published as corrigendum in following websites, • http://bhel.abcpurchase.com • http://tenders.gov.in • http://eprocure.gov.in q) The bidder shall submit his response through bid submission to the tender on e-procurement platform at http://bhel.abcpurchase.com. The bidder would be required to register on the e-procurement market place https://bhel.abcpurchase.com and submit their bids online. SEALED COVER BIDS / E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED.	
22	<u>Fraud Prevention Policy</u> "The bidder along with its associate/collaborators/sub-contractors /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 fraud or suspected fraud as soon as it comes to their notice."	
23	<u>Cartel Formation:</u> All the firms should desist from forming cartel as the practice is prohibited under Section 3(3) (a) & (d) of the competition Act 2002. If any such instance is observed during this tender will attract disciplinary action as per BHEL policies.	
24	<u>Integrity Pact (IP):</u> Signed Integrity pact should be furnished along with the offer. Offers without signed IP will not be considered for evaluation. IP should be signed by authorized official of the bidder / Vendor / Contractor. (Not Applicable to this tender)	
25	<u>Resolution of Disputes:</u> a. If dispute or difference of any kind shall arise between the Purchaser/Consignee and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations. b. If the parties fail to resolve their dispute or difference by such mutual consultation within 30 days of its occurrence, then, unless otherwise provided in the contract, either the Purchaser/Consignee or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided the applicable arbitration procedure will be as per the Arbitration and Conciliation Act, 1996 of India. In the case of a dispute or difference arising between the Purchaser/Consignee and a domestic Supplier relating to any matter arising out of or connected with the contract, such dispute or difference shall be referred to the sole arbitration of an officer in BHEL Trichy, appointed to be the arbitrator by the General Manager/MM BHEL Trichy. The award of the arbitrator shall be final and binding on the parties to the contract subject to the provision that the Arbitrator shall give reasoned award in case the value of claim in reference exceeds Rupees One lakhs (Rs. 1,00,000/-) c. Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued, i.e., BHEL Trichy. d. Jurisdiction of the court will be from the place where the tender enquiry document has been issued, i.e., Trichy, India.	



26	<u>In the event of Force Majeure:</u> a. Notwithstanding the provisions contained in other clauses, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure. For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees , lockouts excluding by its management, freight embargoes and Acts of GOD. b. If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. c. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side. d. In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.	
27	<u>Execution of the order:</u> a. BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s. The mere act of the pre-dispatch inspection (PDI) does not absolve the Supplier from giving the specifications as agreed upon in the Purchase Order. b. In the case of overseas suppliers Inspection call for carrying out the inspection shall be given 30 days before the scheduled contract delivery date. The Inspection date/s given by the Supplier shall be on firm basis. For local Suppliers the Notice period of Inspection shall be 10 working days In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances at Indian Ports in the case of foreign supplier.	
28	<u>Special Provisions for Micro and Small Enterprises (MSE) bidders registered as per MSME act:</u> (Subject to participating MSE vendors should meet the tender requirements of BHEL) ➤ 20% of the tendered quantity is earmarked for MSE suppliers in this tender. ➤ Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE vendor within the "L1+15% price band", the supply shall be shared proportionately. ➤ MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either valid EM-II certificate or valid UAM certificate or valid NSIC certificate or UAM certificate along with attested copy of a CA certificate (Format enclosed as below where deemed validity of UAM certificate has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid	

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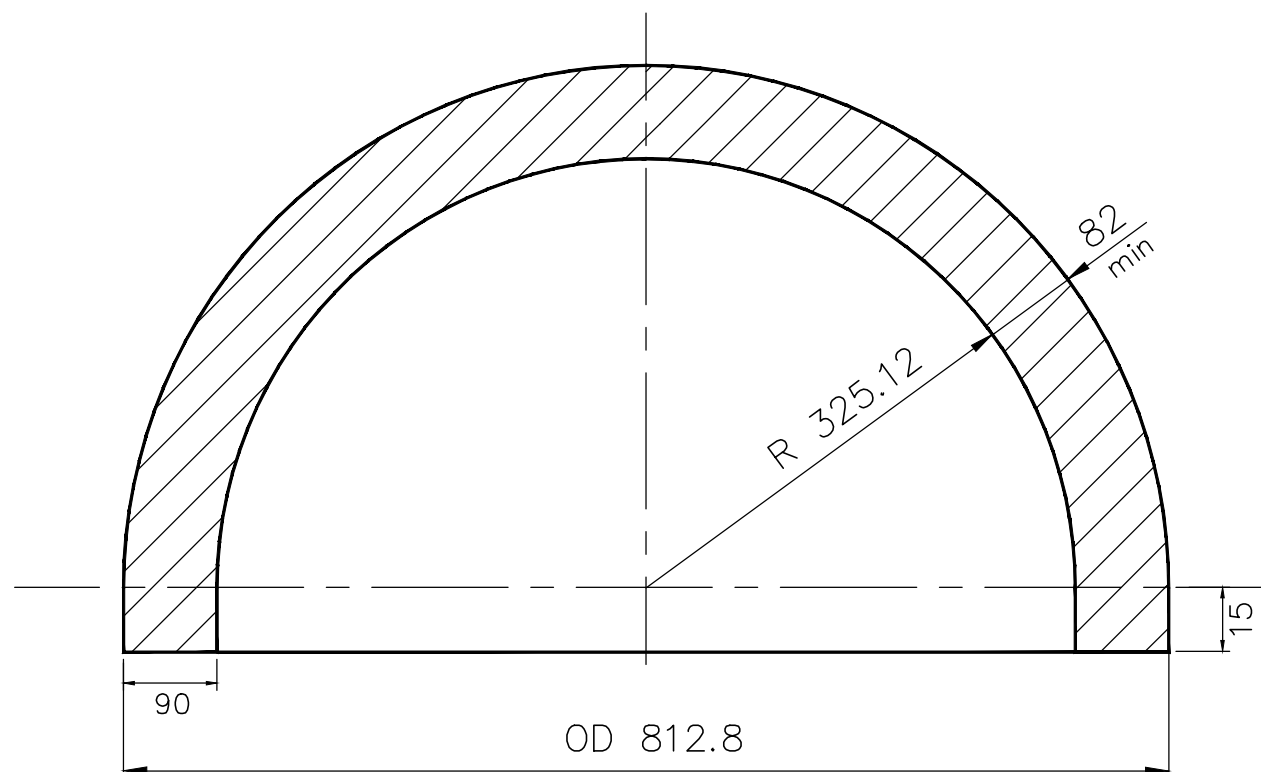
	opening. Documents should be notarized or attested by a Gazetted officer. However, credentials of all MSE suppliers will be verified before considering the intended benefits for MSE suppliers at the time of tender evaluation. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents. ➤ In case of any change in the MSE status of the bidder, it shall be the responsibility of the bidder to notify the change as a part of the bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the bidder and the order is obtained under the premise of an MSE, then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the bidder as per the procurement policy of BHEL. ➤ In case after the bid opening, it is seen that no MSE has become L1, then depending on the nature of the item, if it is not possible to split the tendered items / quantities on account of reasons like customer contract requirements of supplying one make for a given project or technical reasons like tendered items being a system etc., then BHEL would not counter offer the L1 prices even though there may be MSE bidders within the L1+15% band. ➤ If the L1 vendor happens to be a MSE vendor against any item code, then 100% of the qty (for the respective item code) shall be proposed to order on the L1 (MSE) vendor, even though there may be other MSE vendors within the "L1+15%" price band.	
29	Offers shall be submitted in TWO PART bids system (TECHNO-COMMERCIAL BID + PRICE BID).The bidder shall submit his response through bid submission to the tender on e-procurement platform at http://bhel.abcprocure.com within 14:00 Hrs (GMT +05:30) of the due date of this tender. The bidder would be required to register on the e-procurement market place http://bhel.abcprocure.com and submit their bids online. SEALED COVER BIDS/ E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED. Supplier shall upload any other tender documents in the E-Procurement Portal only.	
30	Enclosures: a) Enquiry b) TDC 423/09 c) PBG Format d) List of Consortium banks e) Pre-Qualification requirement (PQR) e) NDA Format f) IBR Amendment g) Inspection Authorities list h) Drawings	
 M. THAMBIDURAI Dy. Engineer Purchase / MM / RM / C&F BHEL, TRICHY - 620 014. (On behalf of BHEL)		<u>SIGNED BY MANUFACTURER / MILL</u> Name of Mill: Designation / Department: Seal & Signature

DRAWING NO: 3-04-321-02749

FOR TOLERANCES OF UNTOLERANCED
DIMENSIONS DURING MANUFACTURE
REFER PLANT STD.NO TP 023 0299

NOTES:

01. DESIGN MANUFACTURE AND INSPECTION AS PER IBR.
02. FOR DESIGN PARAMETERS, REFER ASSEMBLY DRG.
03. FOR TOLERANCES REFER STD.DRG.NO: 4-03-000-00053.
04. NORMALISING AND TEMPERING IS TO BE DONE AFTER HOT FORMING.
05. FITTING SPECIFICATION : SA 234 WP91



		RAW MATL.					A	639.000	
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN		DI	QUANTITY

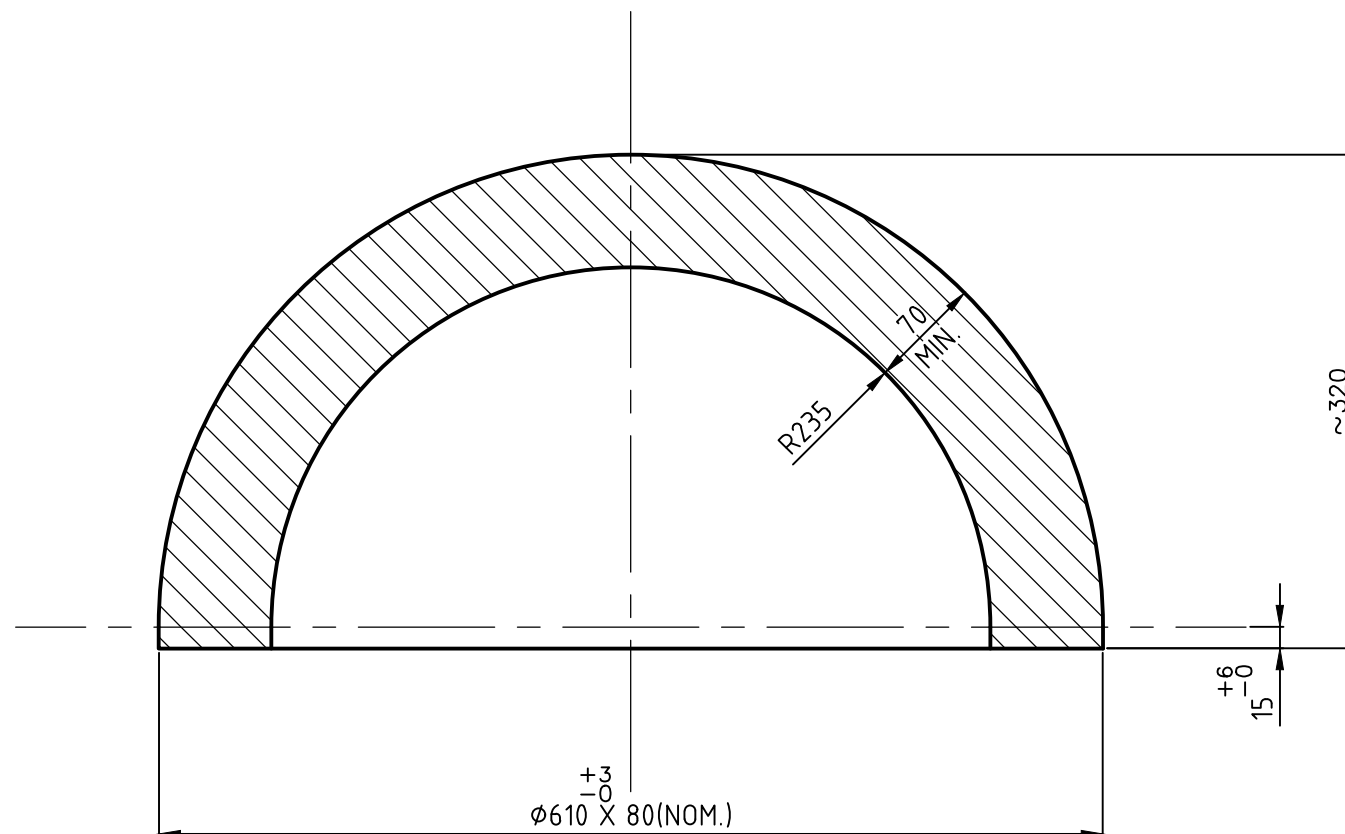
REV 01	DATE 07.01.13	ALTERED : YADAV CHD & APPD: S.A.K
ZONE	NOTE 06 DELETED, BOM CORRECTED.	

FITTING MATERIAL CODE: 92 084 225 0000

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT							
 355-055		Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI – 620014		DRN CHD APPD	NAME PRAVEEN CLR RT	SIGNATURE 	DATE 31.12.10 02.01.11 02.01.11
DEPT PP	ALL DIMENSIONS ARE IN MM		SCALE NTS	WEIGHT (Kg) 639.000	REF TO ASSY / OLD DWG		
CODE 121							
TITLE HEMISPHERICAL ENDCOVER D812.8X90(NOM)					DRAWING NO : 3-04-321-02749		REV 01

3-04-321-03083
DRAWING NO:



NOTES:

1. DESIGN, MANUFACTURE AND INSPECTION AS PER IBR.
2. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
3. NORMALIZING AND TEMPERING NEEDS TO BE DONE AFTER HOT FORMING.
4. FITTING SPECIFICATION : SA234WP91.
5. THE FORMED DISHED END COVER SHALL BE SUPPLIED WITH PLAIN ENDS.
6. THE MAXIMUM THICKNESS SHALL NOT EXCEED 80mm AT ANY POINT ON THE DISHED END.

FITTING MATERIAL CODE: 920840360000

		HS END COVER						267.000	
						SA234WP91			
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN		DI	QUANTITY

REV	DATE	ALTERED :
01		CHD & APPD:
ZONE		

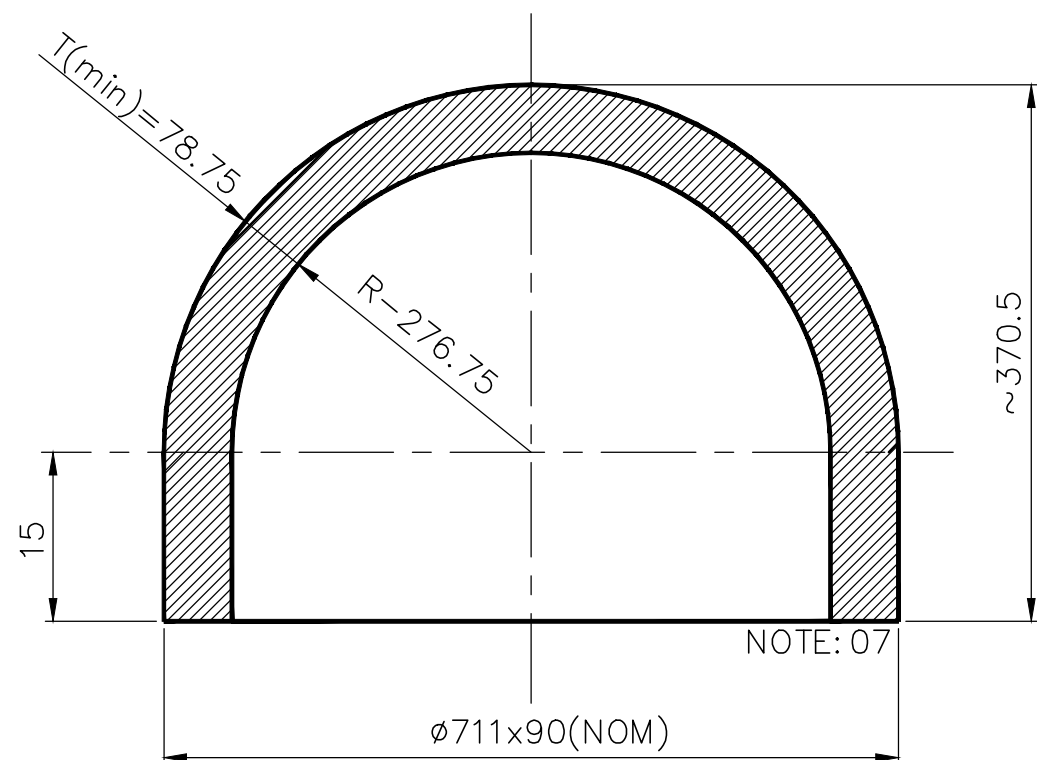
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT							
		 355-055	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014			DRN	NAME DEEPAK	SIGNATURE	DATE 04.05.2018
						CHD	NIRMAL		04.05.2018
						APPD	S.A.K		04.05.2018
DEPT	PP	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (Kg) 267.000	REF TO ASSY / OLD DWG			
CODE	121								
TITLE		HSEC-RAW FORMING Ø610X80(NOM.)				DRAWING NO : 3-04-321-03083		REV 00	

DRAWING NO: 3-04-323-02992

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. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
03. NORMALISING AND TEMPERING IS TO BE DONE AFTER HOT FORMING.
04. FITTING SPECIFICATION : SA234 WP91
05. THE FORMED HEMISPHERICAL END COVER SHALL BE SUPPLIED WITH PLAIN END.
06. THE MAX THICKNESS SHALL NOT EXCEED $T_{\min}/0.875$ AT ANY POINT ON THE DISHED END.
07. THE FORMED HEMISPHERICAL END COVER MAY BE SUPPLIED WITH PLAIN END.

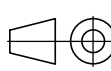


FITTING MATERIAL CODE: 92 084 965 0000

		HS END COVER				SA 234 WP91	A	431.000	
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C	UNIT WEIGHT	C/S
					VAR NO	MATERIAL SPECN	D1	QUANTITY	

REV 01	DATE 23.03.18	ALTERED : C.P CHD & APPD : NIRMAL
ZONE	FITTING WEIGHT CHANGED	

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
 Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI – 620014					DRN	NAME ISMAIL	SIGNATURE	DATE 22.09.14	NO. OF VAR
					CHD	R.MURALI		24.09.14	
					APPD	S.A.K.		24.09.14	
DEPT PP			SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG			ITEM NO	No OF ITEMS
CODE 121			NTS	431.000					
TITLE HEMISPHERICAL END COVER RAW FORMING D711x78.75(MIN)					CARD CODE U 01	DRAWING NO : 3-04-323-02992			REV 01

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:423 Rev No: 09 Effective Date: 21/11/2017 Page: 1 of 5
Product: Machined (upto 4”), Formed & Forged Fittings		

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 Dt: 10/11/2012: Cl 1.0, 2.0 & 5.0 Modified for SS material.

Rev: 08: Dt: 22/09/2017 Title, Clauses 1, 2, 5 & 6 modified; Gr 92 fittings requirements included in Cl 1, 2, 5 & 6; Creep requirements added in Clause 3; Design proof test requirement, if not done earlier, added in general notes..

Rev: 09: Dt: 21/11/2017 - Cl. 3 & 6.a (15) modified.

1.0 MATERIAL SPECIFICATIONS:

All the codes, standards, specifications, drawings & procedures, etc., referred in this TDC shall be of latest revision as on the date of Enquiry/Purchase Order, whichever is earlier, unless specified otherwise.

- Fittings : Seamless Fittings only (Fittings made by welding are prohibited).
- ASME : Carbon Steel (CS): SA105, SA234; Alloy Steel(AS): SA 234,SA182, ASTM A234; Stainless Steel(SS): SA182, SA403⁹
- Additional Requirements : As listed below (Supplementary to above material specifications/ standards & grades)
- Grade, Size and Quantity : As per Purchase order &/ Drawing.

2.0 MANUFACTURING & TESTING REQUIREMENTS:

2.1 Machined Fittings (fittings machined from castings are prohibited; Max size permitted 4”) – Reducers, Couplings & End caps

Starting material Rolled or Forged Bars, Killed steel	Heat treatment as per starting material specifications	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed
	NDE – UT ^d	To be done after Heat treatment. For size above 40 mm – to be done as per ASTM A388 Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4
Finished fitting (after machining to required size)	Heat Treatment	Not required.
	NDE (for all sizes)	• MT (100%)- Procedure - As per ASTM E709. No linear indications (surface NDE indication whose length is $\geq$ three times its width) are acceptable. For WP91/F91 & WP92/F92 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 5 cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.
	Hardness	WP5 - 217 HBW max. SA105 – 137 HBW to 187 HBW. WPB, WPC, WP11/F11, WP12/F12, WP22/F22 – 197 HBW max. WP91/F91 - 195 HBW to 248 HBW – 100% to be checked WP92/F92 – 191 HBW to 269 HBW – 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 : $\leq$ 6.35 mm.

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:423 Rev No: 09 Effective Date: 21/11/2017 Page: 2 of 5
Product: Machined (upto 4”), Formed & Forged Fittings		

	AS, SS : <=1.5 times specimen thick.
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2.2 Seamless Formed Fittings – Elbows, Tees, Reducers, Dished End (End Cover/ Cap)

Starting material:	Heat treatment as per starting material specifications	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed				
1)Tube & Pipe	NDE – UT ^d	Shall be done as per - ASTM E213 with longitudinal notch of 5% wall thickness with min. 0.3 mm and max.1.5 mm. Actual measured notch depth to be specified in Test Certificate.				
2)Forged blank (For end covers)	NDE – UT ^d	For size above 40 mm UT shall be done as per - ASTM A388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
3) Plate	NDE – UT ^d	For size above 10mm SA 578, Acceptance Level - B				
Finished fitting (cold/hot forming)	Heat treatment after forming	Shall be done as per SA234/SA403. When Heat Treatment is required it shall be done as per the below table values:				
		Material	Heat Treatment Temp,C		Soaking time, hr/in	
			Normalising	Tempering	Normalising	Tempering
		CS-WPB & WPC	870-900	-	1/2	-
		AS-WP11, WP12	920-950	655+- 15	1/2	1
		AS-WP5, WP22	920-950	695+- 15	1/2	1
		AS-WP91	1040-1080	750-780	1/2	1
		AS-ASTM A234 WP 92	1040-1080	750-780	1/2	1
		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 for all above materials except SS.				
	NDE (for all sizes) – Except for Plate formed Dished end	- MT (100%) - Shall be as per - ASTM E709 No linear indications are acceptable. For WP91 & WP92 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.				
NDE–for Plate formed Dished end	For Plate Formed Dished end – 100% MT as per - ASTM E709 on both inner and outer surfaces of Knuckle radius and weld ends. No linear indications are acceptable.					
NDE – UT ^d For OD > or=219mm & W.T >or= 6mm	If made from Pipe & Tube – Shall be done as per - ASTM E213 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.					
	If made from Forging Shall be as per - ASTM A388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4					
	If made form Plate shall be as per A578 Level-B					
Hardness	WP5 – 217 HBW max. WPB, WPC, WP11, WP12, WP22 – 197 HBW max. WP91 - 195 HBW to 248 HBW – 100% to be checked. WP92 – 191-269 HBW max. – 100% to be checked.					
Dimension	ASME B16.9 & ASME B16.11, As per Engineering drawing.					
Bend Test	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.					

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:423 Rev No: <i>09</i> Effective Date: <i>21/11/2017</i> Page: 3 of 5
Product: Machined (upto 4”), Formed & Forged Fittings		

	(if starting material is forged blank) (for IBR items)	
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2.3 Forged Fittings – Elbows, Tees, Reducers, Couplings, Flanges & Dished End (End Cover / Cap)

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

Starting material: Rolled or forged Bars, blooms, billets and Killed steel	Heat treatment as per starting material specifications	CS – Normalised AS – Normalised & Tempered SS – Solution Annealed				
1)Tube & Pipe, forged pipe/hollow	NDE – UTd	Shall be done as per - ASTM E213 with longitudinal notch of 5% wall thickness with min. 0.3 mm and max.1.5 mm. Actual measured notch depth to be specified in Test Certificate.				
2)Forged blank (For end covers)	NDE – UTd	For size above 40 mm UT shall be done as per - ASTM A388 In acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
3) Plate	NDE – UTd	For size above 10mm SA 578, Acceptance Level - B				
After forging (cold/hot forging)	Heat treatment	Shall be done as per SA105/SA182. When Heat Treatment is required it shall be done as per the below table values:				
		Material	Heat Treatment Temp,C		Soaking time, hr/in	
			Normalising	Tempering	Normalising	Tempering
		CS- SA105	870-900	-	1/2	-
		AS- SA182 F11 & F12	920-950	655+- 15	1/2	1
		AS- SA182 F5 & F22	920-950	695+- 15	1/2	1
		AS- SA182 F91 & F92	1040-1080	750-780	1/2	1
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 for all above materials except SS.						
Finished fitting	NDE – UT ^d For OD > or = 219mm	UT shall be done as per - ASTM A388 In Acceptance to - ASME Sec.VIII Div.2 Cl.3.3.4				
	NDE (for all sizes)	- MT-(100%) Shall be done as per ASTM E709. No linear indications are acceptable. For F91 & F92 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	SA105 – 137 HBW to 187 HBW. F5 – 143-217 HBW; F9 – 179-217 HBW max. F11, F12 – 143 HBW to 207 HBW, F22 – 156-207 HBW max. F91 - 195 HBW to 248 HBW – 100% to be checked SA182 F92 – 191- 269 HBW max. – 100% to be checked.				
	Dimension	ASME B16.5 & ASME B16.11. As per engineering drawing.				

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:423 Rev No: 09 Effective Date: 21/11/2017 Page: 4 of 5
Product: Machined (upto 4"), Formed & Forged Fittings		

	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.
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General requirements:

- Product analysis as per S50 of ASTM A960 is required.
- Carbon < or = 0.25% for WPB (all thickness), WPC and SA105 (thickness < or = 20mm)
- Carbon < or = 0.30% for WPC and SA105 (thickness > 20mm)
- If UT not done on the starting material, the same shall be done by the fitting manufacturers before forming / fabrication.
- Mechanical Testing including hardness testing: Quantum of testing as per IBR (except for hardness testing of Gr 91 & 92) – Test samples shall be tested in the Heat treatment of fitting delivered condition. For Gr 91 & 92 fittings, hardness testing shall be done on 100% of fittings being supplied (either on ends or surface).
- Pipe made from plate as a starting material and long seam welded should not be used.
- 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).
- Design proof test as per ASME B16.9 should be carried out for the geometric shape and size ordered if already not done.

3.0 *Creep testing shall be carried out as per SIP:RM:01 (latest revision) whenever indicated in the Enquiry/Purchase Order/Engineering Drawing.*

4.0 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.

5.0 MARKING, PRESERVATION AND PACKING:

The following details to be necessarily hot stamped 1. Heat number, 2. Inspecting Authority Seal 3. Specification Grade, code case (if applicable) and Size, 4. Company Seal and "B16"(for ANSI fittings). The rest to be marked as per Specification.

Additionally 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.

6.0 INSPECTION AND CERTIFICATION:

- 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 with Form III-C (for all fittings except dished ends), Form III-I (for dished ends) as per IBR and additional MTC as given below.

Indigenously supplied IBR items: Director of Boilers/Chief Inspector of Boilers/Inspecting Authority approved by IBR, for the respective state in India with Form III-C (for all fittings except dished ends), Form III-I (for dished ends) as per IBR and additional MTC as given below.

Separate Manufacturer's Test certificate (MTC) in English language with following details, shall accompany all products:

- Purchase Order No.(BHEL), TDC No. & Test certificate number
- Specification, Grade with applicable year of code & code case (if applicable), Heat Number, Drawing No., Quantity & Size
- Supplier of the steel used in making the finished product
- Forming process, Chemistry including incidental elements - Heat wise.
- Heat treatment details: temperature, soaking time, cooling medium (for quenching).
- Mechanical test results, Hardness, NDE test results with reference & acceptance standard.



Product: Machined (upto 4”), Formed & Forged Fittings

7. Detailed NDE reports for MT, LPI and UT shall be submitted along with MTC.
8. Photomicrograph at 400X magnification for F91, WP91, F92 & WP92 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.
15. **Creep test report as per SIP:RM:01 (latest revision) whenever indicated in the Enquiry/Purchase Order/Engineering Drawing.**

1. For CE-marking items the TCs with details specified above shall be submitted as per EN-10204 (latest)
For pressure parts test certificates of type 3.1 or 3.2 is acceptable.

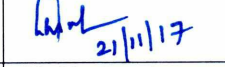
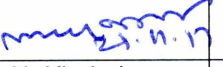
Type 3.1 – Suppliers shall have ISO 9001-2008/2015 (with validity as applicable) certification certified by Notified Body recognized by European community and test certificate certified by suppliers authorized inspection representative.

Type 3.2 – Components inspected and test certificates certified by both the supplier's authorized inspection representative and 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 this TDC.

- b. 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).

 21.11.2017	 21/11/17	 21/11/17	 21/11/17	 21.11.17	 21/11/17
Abdur Rahman	G. Panneer Selvam	M. Nandanakumar	R. Dharmar	N. Kirubakaran	Amit Roy
Sr.Engineer/QA	DGM/QA	AGM/MM	AGM/QC	SDGM/PE/FB	AGM/QA&BE
Prepared By	Reviewed By			Approved By	

BHARAT HEAVY ELECTRICALS LIMITED, TRICHY-14
MATERIALS MANAGEMENT

PQR: C&F: Rev.00 – UDANGUDI & BHUSAWAL

Date: 15.05.2018

Pre-Qualification requirements (PQR) for the procurement of Grade 91 Dished Ends through Open Tender

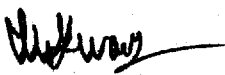
(as per TDC: 0:423/09)

A) Organizational Capability:

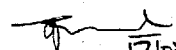
1. Manufacturers having Dished Ends manufacturing facilities are only eligible to participate. Offer from traders, fabricators and stockists are not acceptable and will not be considered for evaluation. Vendor to indicate the nature of the firm. Product catalogue shall be submitted.
2. Suppliers shall submit filled in supplier facility report for forge shop (Format enclosed). Suppliers without basic manufacturing facilities in-house, shall not be considered for evaluation. In house facilities for Heat treatment & Non-Destructive Testing are mandatory requirements for consideration of the offer.
3. If the supplier is not having steel making facility, then source of raw material for the manufacturing shall be from IBR approved well known steel maker or certified by IBR approved inspecting authority (Form-IV to be attached). For the submitted raw material sources, the supplier shall confirm that the raw material test certificate/s will be furnished along with product test certificate/s.
4. Chemical, Mechanical testing shall be done in house or at Labs certified as per ISO 17025 or Government approved labs.
5. Suppliers shall submit a valid ISO 9001 certificate or Quality management system certificate or Written down procedure.
6. BHEL/End customer reserve the right to inspect the item ordered at any stage at vendor's works and if found not meeting the stipulated conditions, material is liable for rejection.
7. BHEL/End customer reserves the right to inspect the sample at vendor's works for giving clearance before bulk production.
8. BHEL reserves the right to visit supplier's works to audit and inspect to ensure the capability for technical evaluation

B) Technical Competence:

1. Point by point confirmation to the TDC requirements is mandatory for consideration of offer and signed TDC shall be submitted.
2. Suppliers shall submit manufacturing process flow chart (Raw material to finished product) & Manufacturing Quality Plan (MQP) to meet the TDC requirements along with technical bid.


MATHAVAN. K

Senior Deputy General Manager
MM / RM / Materials Management
BHEL, TRICHY


G. PANNEER SELVAM
Dy. General Manager
Quality Assurance
BHEL, TRICHY - 620 014.

PAGE 1 OF 2

BHARAT HEAVY ELECTRICALS LIMITED, TRICHY-14
MATERIALS MANAGEMENT

PQR: C&F: Rev.00 – UDANGUDI & BHUSAWAL

Date: 15.05.2018

3. Suppliers shall submit the experienced manpower details specific to Manufacturing, Quality and NDE requirements.

C) Past Experience/ Performance:

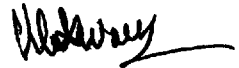
1. Suppliers shall indicate their annual installed capacity for the tendered specifications & it shall be more than the tendered quantity.
2. Suppliers shall have supplied Dished Ends in the tendered specification. Details of supplies made in recent past detailing the quantity, Specification, size & customer details, year wise along with the unpriced PO copies, proof of supply (such as invoice, bill of lading copies and test certificates) covering minimum and maximum sizes (Alloy steel either in Gr 91 / Gr 22 / Gr 12) meeting the tendered size requirements shall be submitted.

D) Financial Soundness:

1. Indigenous suppliers shall submit Audited copies of annual reports (Balance Sheets), Profit & Loss statement for last four years (or from date of incorporation whichever is less). Proprietary and partnership firms shall submit IT returns for last four years (or from date of incorporation whichever is less).
2. Import suppliers shall submit latest reports from a reputed third party business rating agency like Dun & Bradstreet & Creditreform.

Necessary supporting documents shall be submitted for meeting each of the above Pre-Qualification Criteria for evaluation of the offers.

BHEL shall consider/Not-consider the offers based on the evaluation of documents submitted for the above Pre-Qualification Criteria. If required, BHEL shall make on-site assessment of the facilities at supplier's works during the bid evaluation.


K.Mathavan
SDGM/MM/RM

MATHAVAN. K
Senior Deputy General Manager
MM / RM / Material Planning
BHEL / Trichy - 620 014.


G.Panneerselvam
DGM/QA
G. PANNEER SELVAM
Dy. General Manager
Quality Assurance
BHEL, TRICHY - 620 014.



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 Yes/No
Treatment facility
- 6.10.00 If yes: Type of heat treatment possible



FORGE SHOP

- 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:

 BHEL - TRICHY	THIRD PARTY NON-DISCLOSURE AGREEMENT		Doc.No. : ISMS-04/TP/011
			Ver. No: 3.0 Rev. No: 00
	Date : 27 - 10 - 14		

THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL, Trichy on contract is confidential and that the nature of the business of the BHEL, Trichy is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL, Trichy Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

- Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.
- Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL, Trichy all documents and property of BHEL, Trichy, including: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL, Trichy 's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, Trichy and are reasonable given the nature of the business carried on by the BHEL, Trichy I agree that this agreement shall be governed by and construed in accordance with the laws of country.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at _____, this ____ day of _____, 20__.

Name

Company

Signature

BANK GUARANTEE FOR PERFORMANCE SECURITY

(Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s))

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

IFSC AND MICR CODE

Dear Sirs,

1. In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) (VENDOR CODE) with its registered office at _____² hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated ³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for ⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

2. we, ..., (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

3. 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. _____.

4. We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

5. The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

6. We the 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 Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

7. We.....BANK further agree with the Employer that the Employer 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 Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

8. The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier's liabilities.

9. This Guarantee shall remain in force upto and including.....⁷ and shall be extended from time to time for such period as may be desired by Employer.

10. This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

11. Unless a demand or claim under this guarantee is made on us in writing on or before the ⁸we shall be discharged from all liabilities under this guarantee thereafter.

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

13. We..... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed.....⁶

- b) This Guarantee shall be valid up to ⁷
- c) Unless the Bank is served a written claim or demand on or before (minimum 3 to 6 months from the expiry date)⁸ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

14. We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

BANK EMAIL ID:

BANK PHONE NO:

AUTHORISED SIGNATORIES CELL PHONE NO:

BANK FAX NO:

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

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

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 12th April, 2017

To

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

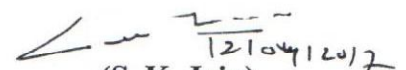
Subject: List of recognised Inspecting/Competent Authorities, Well Known Steel Makers, Foundries/Forgings units, Tube/Pipe Makers, Material Testing Laboratories and Remnant Life Assessment Organizations under Indian Boiler Regulations as on 31st March, 2017

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 31st March, 2017 for your reference and record.

Thanking you,

Yours faithfully,


(S. K. Jain)

Development Officer &
Assistant Secretary, Central Boilers Board
Tel. No.011-23063166

Encl: "As above"

(As on 31/03/2017)

INSPECTING AUTHORITIES

Sl. No.	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, Daman & Diu and Dadra & Nagar Haveli	Daman & Diu and Dadra & Nagar Haveli
7.	Chief Inspector of Boilers, Delhi	N.C.T.D.
8.	Chief Inspector of Boilers, Goa	Goa
9.	Director of Boilers, Gujarat	Gujarat
10.	Chief Inspector of Boilers, Haryana	Haryana & Chandigarh
11.	Chief Inspector of Boilers, Himachal Pradesh	Himachal Pradesh
12.	Chief Inspector of Boilers, Jharkhand	Jharkhand
13.	Director of Boilers, Karnataka	Karnataka
14.	Director of Boilers, Kerala	Kerala
15.	Director of Boilers, Madhya Pradesh	Madhya Pradesh
16.	Director of Boilers, Maharashtra	Maharashtra
17.	Chief Inspector of Boilers, Meghalaya	Meghalaya

18.	Chief Inspector of Boilers, Manipur	Manipur
19.	Chief Inspector of Boilers, Mizoram	Mizoram
20.	Chief Inspector of Boilers, Nagaland	Nagaland
21.	Director of Boilers, Odisha	Odisha
22.	Director of Boilers, Punjab	Punjab
23.	Chief Inspector of Boilers, Puducherry	Puducherry
24.	Chief Inspector of Boilers, Rajasthan	Rajasthan
25.	Director of Boilers, Tamil Nadu	Tamil Nadu
26.	Director of Boilers, Telangana	Telangana
27.	Chief Inspector of Boilers, Tripura	Tripura
28.	Director of Boilers, Uttar Pradesh	Uttar Pradesh
29.	Chief Inspector of Boilers, Uttarakhand	Uttarakhand
30.	Chief Inspector of Boilers, West Bengal	West Bengal
31.	M/s Lloyd's Register Asia 63-64, Kalpataru Square, 6 th Floor, Kondivita Lane, Off. Andheri-Kurla Road Andheri(E), Mumbai-400059	Whole of India except the State of Jammu & Kashmir
32.	M/s Bureau Veritas(India) Pvt Ltd. Marwah Centre, 6 th Floor Opp Ansa Inds. Estate, K. Marwah Marg Off. Saki-Vihar Road, Andheri (East), Mumbai 400 072	Whole of India except the State of Jammu & Kashmir
33.	M/s ABS Industrial Verification(India) Pvt. Limited 10 th Floor, Lakhani's Centrum, Sector 15, Plot No. 27, CBD Belapur (E), Navi Mumbai 400 614	Whole of India except the State of Jammu & Kashmir

34.	M/s TÜV India Pvt. Limited (TUV Nord Group) 801, Raheja Plaza-1, L.B.S. Marg, Ghatkopar(W), Mumbai-400 086	Whole of India except the State of Jammu & Kashmir
35.	M/s Intertek India Pvt. Limited E-20, Block-B1, Mohan Co-operative Industrial Estate, Mathura Road, New Delhi-110 044	Whole of India except the State of Jammu & Kashmir
36.	M/s TÜV SÜD South Asia Pvt. Ltd. TÜV SÜD House, Off Saki Vihar Road, Saki Naka, Andheri (East), Mumbai-400 072	Whole of India except the State of Jammu & Kashmir
37.	M/s TÜV Nord Systems GmbH Co.KG Langemarckstr 20, D-451141 Essen, GERMANY	Europe, Brazil, China, Korea, Middle East countries, Thailand & Turkey
38.	M/s British Engineering Services Limited 5, New York Street, Manchester, M1 4JB, United Kingdom	Europe
39.	M/s Japan Inspection Company Limited RBM Higasghi Yaesu Bldg. 10F, No. 2-9, 1-Chome, hatchobori, Chou-ku Tokyo, 104-0032, Japan	All countries in Asia except India
40.	M/s S.G.S. Korea Company Ltd. Industrial Division, 50, sinsan-ro 29 beon-gil Saha-gu, Busan, Korea (604-838)	Korea & Japan
41.	M/s Bureau Veritas 67-71, Boulevard du Chateau 92200 Neuilly-sur-Seine, FRANCE	All countries except India
42.	M/s Lloyds Register Verification Ltd. 71, Fenchurch Street London EC 3M, U.K.	All countries except India
43.	M/s Velosi certification Bureau Limited Unit 4 Bennet Court, Bennet Road, Reading, Berkshire, RG2 0QX, United Kingdom	Europe, China, Malaysia, Middle East countries & USA
44.	M/s TÜV Rheinland AG Am Grauen Stein, D-51105 Koln Germany	All countries except India

45.	M/s OOO "TekhnoLogicheskieEnergosistime" 109, Vezelskaya, Belgorod, 308015 Russia	Russia, Ukraine, USA, Germany, China & Italy
46.	M/s Engineering Bureau Franke International 55, Amurskaya St., Dnepropetrovsk 49108, Ukraine	Ukraine, Russia, Belarus, China, Uzbekistan, Poland, Belgium, Romania & Czech Republic
47.	M/s ARISE Boiler Inspection & Insurance Insurance Company Risk Retention Group Grand Bay 1,7000 South Edgerton Road Suite 100, Breeksville OH 44141 USA	USA & Canada
48.	M/s Tata Projects Limited SBU-Quality Services, Splendid Tower, 6 th Floor, H.No. 1-8-364, 437, 438 & 445, Begumpet Hyderabad-500 003 Telangana	All countries except India
49.	M/s TÜV SUD Industries Service GmbH Westendstr, 199 80686 Munich Germany	All countries except India
50.	M/s TÜV Thüringen e.v., Service Centre Erfurt, Melchendorfer Str. 64 99096 Erfurt, Germany	Europe & China
51.	M/s SGS-CSTC Standards Technical Services Co. Ltd. 9 th Building No. 69, KangQiao Industrial Park, Block 1159, KangQiao East Road, Pudong District, Shanghai-201 319 China	China
52.	M/s Intertek Inspection Services UK Limited 5 th Floor, 35 Perrymount Road, Haywards Heath, West Sussex, RH16 3BW, United Kingdom	All countries except India
53.	M/s ABSG Consulting Inc 16855 Northchase Drive Houston, TX 77060 United States of America	All countries except India
54.	M/s Hartford Steam Boiler Inspection & Insurance Company, One State Street, 8 th Floor, P.O. Box 299, Hartford, Connecticut 06141-0299 U.S.A.	All countries except India
55.	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 and China

56.	M/s Det Norske Veritas AS Veritasveien 1, PO Box 300 N-1322, Hovik, Norway	Europe, South & North America and Asia(except India)
57.	M/s SGS-TÜV Saar GmbH Am TUEV 1, D-66280 Sulzbach Germany	Europe
58.	M/s Korean Register of Shipping 36, Myeongji Ocean City 9-ro, Gangseo-gu, Busan, Republic of Korea	All countries in Asia except India
59.	M/s AIB-Vincotte International sa Jan Olieslagerslaan 35, 1800 Vilvoorde, Belgium	Europe

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 mm² 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./Cm ²	on.....	W.P.	Kgs./Cm ²
			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/mm²)”, 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/mm²)” 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/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.
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:

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

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/cm² (1000 lbs./sq. inch)

or C = 0 for working pressure exceeding 70 kg/cm² (1000 lbs./sq. inch),

W.P. =working pressure of boiler in kg/cm² (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/cm² (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,

$$\frac{T_s}{2.7} \text{ or } \frac{E_t}{1.5} \text{ whichever is lower}$$

(iii) For temperature above 454°C

$$\frac{S_r}{1.6} \text{ or } S_c \text{ whichever is lower}$$

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 $\frac{E_t}{1.5}$ or $\frac{S_r}{1.6}$

$$\frac{E_t}{1.5} \text{ or } \frac{S_r}{1.6}$$

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

- for integral economiser tubes, the maximum water temperature for which the part of the element is designed plus 11°C (20°F);
- for furnace and boiler tubes, the saturation, temperature corresponding to the working pressure plus 28°C (50°F);
- for convection superheater tubes, the maximum steam temperature for which the part of the element is designed plus 39°C (70°F);
- 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 $R/D \leq 2.5$ - 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 $1\frac{1}{4}$ 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 $1\frac{1}{2}$ times the maximum working pressure at the superheater outlet but not less than $1\frac{1}{4}$ 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 $1\frac{1}{4}$ to $1\frac{1}{2}$ 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.—

*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 than 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 per 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	Replication	Sampling	Deposit Analysis	Outside Diameter and	Fibre Optic Inspection	Hardness	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°C)	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°C & 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

Component	Visual	Ultra-sonic testing	Magnetic particle	Liquid/Dye Pene-	Replication	Sampling	Deposit Analysis	Outside Diameter	Fibre Optic Ins-	Hardness	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 $20 \pm 2^\circ\text{C}$. 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/cm ² |
| (b) | V-Notch specimen | 3.46 kgfm/cm ² |

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

<i>Fee Rs</i>	<i>Date of Payment</i>	<i>Date of Inspection</i>	<i>Certificate No. and Date</i>	<i>Period of certificate</i>	<i>Working Pressure Kg/cm²</i>	<i>Boiler Rating</i>	<i>Evaporation T/hr or Kg/hr</i>	<i>Initials of Inspector/Competent Person</i>

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, fert 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

No. of valves each chest

Type

Diameter of valve seat(mm)..

Diameter of Neck(mm).....

Diameter of outlet(mm).....

.....

(A)	(B)	(C)

REQUISITE AREA OF SAFETY VALVES

For Saturated steam

For Superheated steam

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

$$A_s = \sqrt[4]{1 + \frac{1.5T}{1000}}$$

E = ; C = ; P = ; A =

A_s = ; 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 Date of Test Test pressure
..... Kg/cm²

Approved working pressure Kg/cm²

Boiler connections Condition of fire

Fuel used Draught

Safety Valve lifted at (A) kg/cm². (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./cm ² (g) ON : _____
W.P.	:	_____ Kg./cm ² (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

I. Description	Constructor's Name and address.....
	Manufactured for/Stock purposes
	Contract No.
	Type of Boiler Length overall
	Diameter inside Largest belt
	Design pressure Kg/cm ²
	Reheater Pressure -----Kg/cm ²
	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.....°C

Reheater Outlet °C

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./sq.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/cm ²
			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..... °C

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 _____°C 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

Name and signature of

Competent Person

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..... °C

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 _____°C 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

Name and signature of

Competent Person

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./cm²

Design temperature..... °C

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

MAWP = Maximum Allowable Working Pressure in Kg./cm²Hydraulic test pressure..... kg./cm²

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./cm²

and maximum temperature of _____ °C and satisfactorily withstood a hydraulic test using water or kerosene or any other suitable liquid to a pressure of _____ kg./cm² 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

Name and signature of

Competent Person

Inspecting Authority

who witnessed the tests

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

Maker _____

(Name and signature)

(Name and Signature)

Name and signature of

Name and signature of

Competent Person

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

Name and signature of

Competent Person

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, BLOWDOWN TANK, FEEDWATER TANKS,
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. (°C) :

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

Process of Manufacture, Material condition, chemical composition, Tensile Strength, Tolerances, :

Refer enclosed Raw material

Design Pressure (Kg./cm²) :

Design Temp.(°C) :

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 Person

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

Maker _____

(Name and signature)

(Name and Signature)

Name and signature of

Name and signature of

Competent Person

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 laboratory 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 ORGANISATION" 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 400°C and 25 years of operation for boilers operating less than 400°C 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 400°C and twenty-five years of operation for boilers operating less than 400°C, 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 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 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

Note:—The principal regulations were published in the Gazette of India, *vide*, number S.O. 600, dated the 15th day of September, 1950 and last amended *vide* G.S.R. 8, dated the 17th January, 2014.