

BHEL recently received guidelines from Govt. Of India and Central Vigilance Commission and we have been asked to comply with the guidelines with regard to dealings with Indian Agent/Foreign Agent of Foreign Suppliers.

1. Mandatory submission of an Agency Agreement

- 1.1 It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.
- 1.2 The Agency Agreement should specify the precise relationship between the foreign OEM/foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.
- 1.3 In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.
- 1.4 Agents will file an authenticated Photostat copy duly attested by a Notary Public / Original certificate of the Principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission / remuneration / salary / retainer ship being paid by the principal to the agent.
- 1.5 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the Foreign Principal.

2. Disclosure of particulars of agents / representatives in India

2.1 Tenderers of Foreign nationality shall furnish the following details:

- 2.1.1 The Bidder(s) / Contractor(s) of foreign origin shall disclose the name and address of the agents / representatives in India if any and the extent of authorization and authority given to commit the Principals. In case the agent / representative be a foreign Company, it shall be confirmed whether it is existing Company and details of the same shall be furnished.
- 2.1.2 The amount of commission / remuneration included in the quoted price(s) for such agents / representatives in India.
- 2.1.3 Confirmation of the Tenderer that the commission / remuneration, if any, payable to his agents / representatives in India, paid in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details:

2.2.1 The Bidder(s) / Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any, indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents / representatives.

2.2.2 The amount of commission / remuneration included in the price(s) quoted by the Tenderer for himself.

2.2.3 Confirmation of the foreign principals of the Tenderer that the commission / remuneration, if any, reserved for the Tenderer in the quoted price(s), paid in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.

2.3 Failure to furnish correct and detailed information as called for in paragraph 2.1 & 2.2 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BHEL Besides this there would be a penalty of banning business dealings with BHEL or damage or payment of a named sum.

Please furnish the above information immediately

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved

in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors". framed by the Principal.

Section 4 – Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

- 6.1 The Bidder(s)/ Contractor(s) undertake(s) to obtain from all subcontractors a commitment consistent with this Integrity Pact and report Compliance to the Principal. This commitment shall be taken only from those sub-contractors whose contract value is more than 20 % of Bidder's/ Contractor's contract value with the Principal. The Bidder(s)/ Contractor(s) shall continue to remain responsible for any default by his Sub-contractor(s).
- 6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
- 6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders/ Contractors /Sub-contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 –Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.
- 8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 8.6 The Monitor will submit a written report to the CMD, BHEL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the

Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.10 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact begins and shall be binding on and from the submission of bid(s) by bidder(s). It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal
(Office Seal)

For & On behalf of the Bidder/ Contractor
(Office Seal)

Place-----

Date-----

Witness: _____

(Name & Address) _____

Witness: _____

(Name & Address) _____

 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.....dated³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for⁵ (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 thebank 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 the⁸we 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 to⁷
- 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	Anchra 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

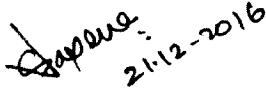
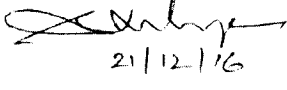
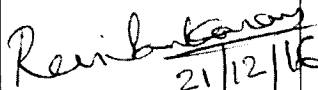
**BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPALLI 620 014**

QUALITY ASSURANCE

SIP: PP: 21 Rev. 07

Page 1 of 4

**COLOUR CODES FOR TUBES AND PIPES
(FOR BOILERS, PRESSURE VESSELS & HEAT EXCHANGERS)**

REVISION	DATE	PREPARED	REVIEWED	APPROVED
01	05-02-1999	R. Sasikumar	A. R. Reddy	K. Rengachari
02	22-07-2004	K. Ganesan	U. Revisankaran	C. R. Raju
03	20-01-2009	V. Kalyanaraman	S. Selvarajan	U. Revisankaran
04	13-05-2011	C. Haritha	V. Kalyanaraman	S. Selvarajan
05	27-05-2015	Vaibhav Saxena	S. Selvarajan	U. Revisankaran
06	28-10-2015	Vaibhav Saxena	Manu Shankar. H	S. Selvarajan
07	21-12-2016	 Vaibhav Saxena 21/12-2016	 S. Selvarajan 21/12/16	 U. Revisankaran 21/12/16

RECORD OF REVISIONS

Rev. No	Clause No.	Details of Revision	Remarks
01		New Specifications included based on TDC revision.	--
02		Amendment A1 dt. 26.04.01 issued for Rev. 01 incorporated. Colour code for SA 213 Gr. T23 added.	--
03		1) Colour code for SA 213 Gr. T92, P23, P92, SA178 Gr. D added. 2) Colour code for SA 210 Gr. C modified to BLUE only.(From BLUE & GREEN)	--
04		Colour code for super 304H added	--
05		1) First para modified for clarity for colour codes containing more than one colours. 2) UNS number for Super 304H added.	--
06		Colour code for super 304H corrected in line with Revision 04.	--
07		1) First paragraph modified to include Instructions for sequence for colour code bands. 2) Sl. No. column added in table. 3) Colour code for SA 312 Gr. TP 304H added.	--

Following Colour codes are to be applied as longitudinal bands (if not specified in other documents) on tubes & pipes to identify them to specification during receipt, storage, issue and processing. For heat exchanger tubes circumferential colour code can be provided at both ends of tubes (300 mm away from end). If the Colour code contains more than one Colour then bands of Colours shall be applied adjacent to each other without any overlap. ***In case of multiple colour bands, the sequence shall be maintained as indicated in the table.***

Sl. No.	Specification	Colour 1	Colour 2	Colour 3
1.	12 X 1 MØ	RED	YELLOW	
2.	13 Cr Mo 44	ALUMINIUM	BLACK	
3.	A 200 Gr. T5	ALUMINIUM	RED	YELLOW
4.	A 200 Gr. T9	ALUMINIUM	GREEN	YELLOW
5.	AISI 602	WHITE	YELLOW	
6.	API 5L Gr. B	ALUMINIUM		
7.	BS 3059 PART2 CDS/HFS 360	ALUMINIUM	BLACK	BROWN
8.	BS 3059 P2 S2 440	ALUMINIUM	BLACK	RED
9.	BS 3059 P2 S2 622 Gr. 490	ALUMINIUM	BLACK	GREEN
10.	BS 3602 PART1 CDS 360	ALUMINIUM	BLACK	BLUE
11.	NFA49-213 42C	ALUMINIUM	BLUE	BROWN
12.	NFA49-213 TU 10CD9.10	ALUMINIUM	BLUE	RED
13.	NFA49-213 TU 15CD2.05	ALUMINIUM	BLUE	GREEN
14.	NFA49-213 TU Z10CD9	ALUMINIUM	BLUE	YELLOW
15.	NFA49-213 TU Z10CDVNB09.01	ALUMINIUM	GREEN	RED
16.	SA 106 Gr. B	RED		
17.	SA 106 Gr. C	BLUE		
18.	SA 178 Gr. D	ORANGE		
19.	SA 179	BLACK	BLUE	GREEN
20.	SA 192	WHITE		
21.	SA 199 T5	BLUE	BROWN	RED
22.	SA 209 Gr. T1	ALUMINIUM	RED	
23.	SA 210 Gr. A1	YELLOW		
24.	SA 210 Gr. C	BLUE		
25.	SA 213 Gr. T11	ALUMINIUM	YELLOW	
26.	SA 213 Gr. T12	BROWN	YELLOW	
27.	SA 213 Gr. T2	BROWN	GREEN	
28.	SA 213 Gr. T22	GREEN	RED	
29.	SA 213 Gr. T23	RED	WHITE	
30.	SA 213 Gr. T5	BLACK	BROWN	GREEN
31.	SA 213 Gr. T9	BROWN	WHITE	
32.	SA 213 Gr. T91	GREEN	YELLOW	
33.	SA 213 Gr. T92	BROWN	BLUE	
34.	SA 213 Gr. TP 304	BLUE	GREEN	YELLOW
35.	SA 213 Gr. TP 304H	BLACK	BLUE	YELLOW
36.	SA 213 Gr. TP 304L	BLUE	WHITE	YELLOW
37.	SA 213 Gr. TP 309H	BLACK	BROWN	YELLOW
38.	SA 213 Gr. TP 316	BROWN		
39.	SA 213 Gr. TP 316 Ti	BLACK	BLUE	
40.	SA 213 Gr. TP 316L	BLUE	BROWN	YELLOW
41.	SA 213 Gr. TP 321	BLUE	WHITE	
42.	SA 213 Gr. TP 321H	BLACK	WHITE	
43.	SA 213 Gr. TP 347H	BLACK	YELLOW	

Sl. No.	Specification	Colour 1	Colour 2	Colour 3
44.	SA 268 Gr. TP 405	ALUMINIUM	GREEN	
45.	SA 268 Gr. TP 410	BROWN	RED	YELLOW
46.	SA 268 Gr. TP 443	BLUE	GREEN	WHITE
47.	SA 269 TP 316	GREEN	RED	YELLOW
48.	SA 312 Gr. TP 304	BLUE	YELLOW	
49.	SA 312 Gr. TP 304L	BLUE	RED	YELLOW
50.	SA 312 Gr. TP 304H	BLACK	BLUE	YELLOW
51.	SA 312 Gr. TP 316	BLACK	GREEN	
52.	SA 312 Gr. TP 316L	BLACK	BLUE	BROWN
53.	SA 312 Gr. TP 321	BLUE	BROWN	
54.	SA 312 Gr. TP 347	BLUE	RED	WHITE
55.	SA 333 Gr. 1	BLACK	BROWN	RED
56.	SA 333 Gr. 3	BLACK	GREEN	RED
57.	SA 333 Gr. 6	BLUE	GREEN	RED
58.	SA 334 Gr. 1	BROWN	GREEN	RED
59.	SA 334 Gr. 3	BLACK	RED	YELLOW
60.	SA 334 Gr. 6	BLACK	BLUE	RED
61.	SA 335 Gr. P1	BROWN	GREEN	YELLOW
62.	SA 335 Gr. P11	GREEN	WHITE	
63.	SA 335 Gr. P12	BLACK	RED	
64.	SA 335 Gr. P2	BLUE	BROWN	GREEN
65.	SA 335 Gr. P22	BLUE	RED	
66.	SA 335 Gr. P23	RED	WHITE	
67.	SA 335 Gr. P5	BLACK	BROWN	
68.	SA 335 Gr. P9	ALUMINIUM	BROWN	
69.	SA 335 Gr. P91	BROWN	RED	
70.	SA 335 Gr. P92	BROWN	BLUE	
71.	SB 163 Inconel	BLACK	GREEN	YELLOW
72.	ST 35.4	ALUMINIUM	BLUE	
73.	Steel 20	GREEN		
74.	Structural Tubes & Pipes	BLUE	BROWN	WHITE
75.	X20 Cr Mo V 121	BLACK		
76.	SA 213 UNS S30432(Super 304)	BLACK	RED	GREEN

@@@@@@@@@@

**Technical: Seamless Tubes & Pipes Suppliers
(Carbon / Alloy / Stainless Steel)
Supplier Facility Report**

1. Name of the Company

2. Address of the Registered Office
(Telephone, E-Mail, Fax)

3. Factory Location and Address
(Telephone, E-Mail, Fax)

4. Installed Capacity (Tonnes / Year)

4.1) Carbon Steel

a) SA 192

b) SA 210 Gr. A1, C

c) SA 106 Gr. B, C

d) Riffled Tube / SA 210 Gr. C

4.2) Alloy Steel

a) SA 335 P11, P12, P22

b) SA 213 T11, T22

c) SA 335 P91, SA 213 T91

d) SA 335 P23, P92

e) SA 213 T23, T92

f) Riffled Tube /
SA 213 T12, T22, T23

4.3) Stainless Steel

a) SA 213 TP 304H

b) SA 213 TP 347H

c) SA TP 347HFG

d) Super 304H

5. Are you making your own steel
(Bloom) for making Tubes / Pipes ?

YES

☐

NO

☐

6. If yes, for Sl. No. 5

- a) Type of Furnace
- b) Capacity of furnaces
(Metric Tonnes / Melt)
- c) Facility for manufacture
of Blooms

7. If No, for Sl. No. 5

- a) Source of Raw Material (Blooms)

8. Tube / Pipe Manufacturing Facility details

8.1 Capacity of the rolling mill with respect to
Diameter (Minimum and Maximum),
Thickness (Minimum and Maximum) and
Length (Maximum)

- a) Through Hot Finishing
- b) Through Cold Finishing

8.2 Type & Make of Hot Mill along with the details
of the Individual Equipments

8.3 Type & Make of Cold Mill along with the details
of the Individual Equipments

9. Heat Treatment Facility Details

- a) Capacity of the Furnaces
- b) Type of Heat Treatment Carried out
(Batch or Continuous)

10. In House Testing Equipments Details

- a) Online UT Facilities
- b) Online Eddy Current (EC) Facility
- c) Hydro Test Facilities
(Indicate the Maximum Pressure)
- d) Chemical and Mechanical Testing Facilities

11. Details of Accreditation for Quality Systems
(Like ISO, ASME, API etc.,)

12. Are you Approved by any
Third Party / Statutory Agency ?

If so, specify the Agency (**Attach details in ENGLISH**)

13. Have you manufactured the following
Size / Specification / Length to

BHEL or any other well-known Boiler Manufacturer for Boiler Application

Please provide the details of to whom, when and how much supplied.

a) TUBES:

TUBES REQUIREMENT- LENGTH : 6500 mm to 13800 mm			
SL. NO.	OUTER DIAMETER	WALL THICKNESS	SPECIFICATION
1	21.3 to 73.01 mm	2.11 to 14.02 mm	SA 106 Gr B / Gr C (Carbon Steel) SA 335 P12, P22, P23, P91, P92 (Alloy Steel)
2	28.6 to 76.1 mm	3.2 to 12.5 mm	SA 192 / SA 210 Gr A1 / Gr C (Carbon Steel) SA 210 Gr. C (Rifle Tubes) SA 213 T12, T22, T23 (Alloy Rifle Tubes)
3	14 to 76.1 mm	3.2 to 12.5 mm	SA 213 T11, T22, T23, T91, T92 (Alloy Steel) SA 213 TP 304 H, TP 347 H, TP 347 HFG, Super 304 H (SS)

b) PIPES:

PIPES REQUIREMENT – LENGTH 3000 mm to 9000 mm			
SL. NO.	OUTER DIAMETER	WALL THICKNESS	SPECIFICATION
1	88.9 to 864.00 mm	3.96 to 148.0 mm	SA106 Gr B / Gr C (Carbon Steel)
2	88.9 to 965.00 mm	3.96 to 130.0 mm	SA335 P11, P12, P22, P23 (Alloy Steel)
3	127.0 to 812.8 mm	11.50 to 100.00 mm	SA335 P91, P92 (Alloy Steel)
4	88.9 to 323.9 mm	3.05 to 12.5 mm	SA312 TP304H, 321 H, 316 (SS)

14. Please go thro the attached **Technical Delivery Condition (TDC)** and give point-by-point confirmation.

a) For Tubes: TDC: 0:102, 0:105, 0:119

b) For Pipes: TDC: 0:101, TDG: 32, TDG: 100, TDG: 101, TDG: 26, TDG: 6876

PLACE :

DATE :

SIGNATURE WITH SEAL

NOTE: Endose Additional Sheets / Annexures wherever required referring the Sl. No. of this format.

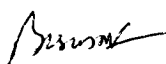
ANNEXURE-B-Rev 01
ENQ NO. 1501700063

Enquiry Terms & Conditions for Supply of Seamless T91, T92 & P91 Tubes & Pipes

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 Confirmation/ Comments
01.	<u>Material specification:</u> Supply shall be made strictly as per Specifications mentioned in the enquiry.	
02.	<u>Specification, Size & Quantity:</u> a) Specification, size and quantity shall be as given in enquiry. b) All tubes & pipes are to be supplied fully meeting the Technical Delivery Conditions (RFQ item No. 220 as per TDC 101 Rev 18 & RFQ item No. 10 to 210 as per TDC 102 Rev 16). c) If there is any deviation, the same should be mentioned clearly with the specific clause no. of the TDC and the deviation against it in the e- procurement offer itself. d) All tubes & pipes are to be stenciled and colour coded, longitudinally and continuously throughout the length of the tubes with specific details as listed out in the above respective TDCs and the SIPP 21 Rev 07. e) All tubes & pipes are to be supplied to the specific length detailed in the description. Any deviation in length has to be indicated in the offer itself. Supplier shall indicate the place of manufacture & mill name in the offer.	
03.	<u>Pre-Qualification Requirement (PQR)</u> In addition to the TDC requirements, suppliers shall meet the below Pre-Qualification Requirements (PQR). The offers of the suppliers who fail to do so will be liable for rejection A) <u>Organizational Capability:</u> 1. Manufacturers having tube mill are only eligible to participate. Offer from traders, re-rollers (Suppliers having only cold finishing facility), 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 Tube mill (Format enclosed). Suppliers without basic manufacturing facilities in-house, shall not be considered for evaluation. In house facilities for Heat treatment & Non-Destructive Testing (On-line UT & Online Thickness Measurement facility for Tubes) 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). <i>If the supplier is dependent on more than one source for steel making, all the sources should be indicated; and the supplies should be restricted to the indicated list of raw material suppliers.</i> 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 first lot of materials 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 to meet the TDC requirements along with technical bid.
3. Suppliers shall submit the experienced manpower details specific to Manufacturing, Quality 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 for each specification
2. Suppliers shall have supplied tubes in each of the tendered specification. Details of supplies made in the 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 sample test certificates) covering minimum and maximum sizes (either in SA213T91/ SA213T92 grades) 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 the last four years (or from date of incorporation whichever is less).
2. Import suppliers shall submit latest report from a reputed third party business rating agency like Dun & Bradstreet, Credit reform.

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

BHEL reserves the right to consider/Not-consider the offers based on the evaluation of documents submitted for the above Pre-Qualification Criteria. BHEL also reserves the right to have on-site assessment of the facilities at supplier's works during the bid evaluation.

04 Online Supplier Registration:

All vendors who are not registered vendor of BHEL, Trichy for the tendered specification may also submit duly filled-in Supplier Registration form through online portal <http://www.supplier.bhel.in> and submit all relevant documents as required.

05 Offer Submission:

- Offer is to be submitted in **TWO part bids system** (Technical bid + Price bid) in the E-Procurement portal <https://bheleps.buyjunction.in>. Scanned 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.
- At its option, 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,
<https://bheleps.buyjunction.in>
<http://tenders.gov.in>
<http://eprocure.gov.in>
- After the scrutiny of PQR & technical bids, the price bids of only techno-commercially qualified offers shall be opened with prior intimation.

06 Authorization for participation in EPS portal through DSC:

i) E-Tender Participation requirements

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 (<https://bheleps.buyjunction.in>). 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. Please intimate the authorized person name, Mail ID for registering DSC with BHEL to participate in E-Tenders	
07	Validity: Offer/Price validity of 60 days is required from the Price bid opening date.	
08	Delivery: The offer shall clearly indicate delivery period in fixed number of weeks/Months from the date of Purchase Order.	
09	A. IMPORTS: • Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILO – Liner in Liner Out) basis. • Port of loading should be indicated without fail. • Port of discharge should be Chennai. • The shipment mode shall be “Containerized Cargo” only and to be specified clearly in the offer. • For Japanese sources only, the shipment mode shall be “Containerized Cargo or Break Bulk” and to be specified clearly in the offer. <u>FOR CFR INCO TERMS – CONTAINERIZED CARGO</u> a) For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total landed Cost. b) In case of shipment through Containers on CFR basis, the BL should bear the endorsement that “14 free days for Container Detention is applicable”. <u>BREAKBULK CARGO (Applicable for Japanese sources only):</u> a) For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis. b) The materials will be Custom cleared from Port itself. <u>INFORMATION TO IMPORT SUPPLIERS:</u> A) The Indian Customs 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. Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter) a.) The vendor should furnish the Non-Negotiable Documents (Air Way Bill/Bill of Lading, Commercial Invoice, Packing List, and Certificate of Origin) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge. b.) Vendor will be held responsible for the penalty arises against the late filing of Bill Of entry due to: - Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival - Discrepancy in documents - Short landing of Consignments (For shipments on CFR/CPT/CIF/CIP – Chennai Port) B) All the shipments for the contracts (POs) finalized on CFR -Chennai Port basis - Delivery Orders involving multiple agencies like liners/freight forwarders are not allowed. There must be a single agency office at the final discharge Port (Chennai) for issuing the Delivery Order to BHEL. - The detention/demurrage charges arise 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. - Apart from the normal charges like Terminal Handling Charges, Container cleaning Charges, Delivery Order Charges at final port of discharge no other charges will be borne by BHEL.	

(iv) The liner/freight forwarders should be properly communicated by the Vendor for not to claim such charges for issuing Delivery Order. If the liner/freight forwarder claims such charges in their invoices, the same amount will be deducted from the Vendor bills without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden costs or charges are:

- 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

10 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.

11 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) Payment through bank is not preferred. In case of payment through bank is opted by supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of goods to site/stores with consignee copy attached. In this case loading will be 3% on the offered value.

iv) Offers of indigenous Suppliers with payment terms as LC / Advance Payment 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 (for the tendered specification), the payment will be made after 45 days of receipt and acceptance of materials after testing at BHEL Lab. In case of 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.

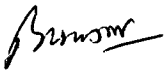
iii) Any deviation in the above payment term will attract loading as mentioned below. "Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

iv) 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. ➤ Offers of import supplier with payment terms as Advance Payment will be rejected.	
12	<u>Liquidated Damage (Indigenous & Imports):</u> 1. For staggered delivery schedule, 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. 2. Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value). 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.	
13	<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.	
14	<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.	
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.	
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 strongly discourages the engagement of Agents by foreign principals, to deal with BHEL, in BHEL's tenders. b. In case of foreign suppliers representing through their Indian/foreign agents, agency agreement should be submitted, else offer is liable for rejection. Agency agreement requirements attached as separate file and full compliance to it shall be ensured while submitting the same. 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.	

	➤ If 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	Evaluation Criteria: 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) Indigenous Vendors 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. 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 (SGST, CGST/IGST), hence the same is excluded for arriving at the landed cost. II) Import Vendors 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) A. Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LIFO – 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 1.5% 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	General condition: a) Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be submitted / uploaded in ENGLISH language only. If the documents submitted have other than English language, translation of the same shall be provided for evaluation. b) In addition to TCs in relevant IBR forms corresponding mill TCs should also be provided along with dispatch of tubes. Two sets of original and one copy of all such TCs are to be provided to BHEL, Trichy. c) 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. d) Acceptance of Test Certificates by BHEL before dispatch is must. e) While dispatching the tubes, in addition to bundling with metal straps, we require slinging arrangement with nylon belt (not rope) for easy handling at loading and unloading points. f) We require the shipment of the Tubes to be as per the dates mentioned against the individual items in the enquiry. g) Multiple PO may also be placed considering the applicable duty structure of the respective requirement/Qty. h) Confirmation for partial ordering to be indicated in the offer itself. i) No revision of prices will be entertained after the tenders are opened. j) 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. k) BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.	

	l) 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. m) 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. n) 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. o) Offer will be evaluated based on Landed cost to BHEL- Trichy on individual line item basis only. p) Vendor should physically weigh the materials before stuffing them into container and incorporate the same in BL and packing slip q) Offers for part quantities on item level basis are not acceptable to BHEL. While tenderers can quote for some or all the tendered items, no supplier shall quote for partial quantity of any given enquiry item. Such partial offer would not be considered in the enquiry for that item. r) No payment will be made for the excess quantity / length. s) Offer should be submitted only as per the Unit of Measurement (UOM) specified in the enquiry. t) 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. u) All documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. v) The bidder shall submit his response through bid submission to the tender on e-procurement platform at https://bheleps.buyjunction.in. The bidder would be required to register on the e-procurement market place https://bheleps.buyjunction.in and submit their bids online. SEALED COVER BIDS / E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED.	
22	Fraud Prevention Policy "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	Cartel Formation: 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	Integrity Pact (IP): 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.	
25	Resolution of Disputes: 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	In the event of Force Majeure: 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 c. 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 suppliers.
28	<u>Enclosures:</u> a) Technical Delivery Conditions b) PBG Format & List of Consortium Banks c) NDA Format d) Supplier Facility Report Format e) Agency Agreement requirements f) Integrity Pact g) SIPPP21-07 Colour Codes
<u>ON BEHALF OF BHEL</u>  BHASKARNATH BISWAS Asst. Engineer - Gr-II MM / Purchase / Tubes BHEL, TRICHY - 620 014.	
<u>SIGNED BY MANUFACTURER / MILL</u> Name of Mill: Designation / Department: Seal & Signature	

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:101 Rev No: 18 Effective Date: 11/11/2017 Page: 1 of 4
Product: Seamless Steel Pipes (for Boiler And Piping)		

Record of Revision:

Rev 09: 15/02/03:Cl.3.0 revised

Rev 10: 27/01/04 Cl.8 Hydraulic test removed, further clauses renumbered. Annexures introduced for Cl.11. In Cl.2 limits for carbon in Gr C modified. In Cl. 4 normalizing made mandatory for all pipes of Gr C & Gr B meant for fitting. In Cl.5.0 test coupon for pipes meant for fittings removed.

Rev 11: 29/12/07 Cl 1, P92 included.P2, P5, P9, 304L, 321 Deleted.Cl.4, 10, 11, modified.

Rev 12: 29/07/10 Cl 1, P91, P92 Deleted and included in TDC 0123; Cl: 4, 5, 7, 8, 10, 11 modified.

Rev 13: 26/10/12 Cl 2, 6 & 11 modified for SS material

Rev 14: 29/12/12 Cl 4 – Heat treatment for CS modified. Cl 6 – corrected.

Rev 15: 28/11/13 TDC 123 Rev 00 and TDG 32 Rev 03 merged with TDC 101 Rev 15 & Product description modified. Cl 3 added. Cl 5, Cl 8, Cl12 modified. SA335 Gr 91, 92 included (Cl 1) and subsequent dimensional tolerance (Cl 3), heat treatment (Cl 5), mechanical testing (Cl 6), and photomicrograph (Cl 7 iii) added. SA335 Gr 23 removed from TDC 123 Rev 00

Rev 16: Cl 3– OD & ID tolerance revised, Cl 5– temperature for Gr 91, 92 modified, Cl 6 – mechanical test values changed in-line with ALSTOM purchase specification, Cl 7 – PMI magnification & frequency clarified, Cl 9&11 – modified, Cl 12-changed as per latest IBR.

Rev 17: Dt: 13/10/2017: Cl 1 modified; Cl 4 modified to include finishing process and polygonization requirements for pipes of OD ≤ 76.1; Cl 5 modified; Cl 6(c) added to include creep requirements; Cl 8 & 9 modified; Cl 12-changed as per latest IBR to include MAWP requirements and IBR Form IV.

Rev. 18: Dt: 11/11/2017: Cl. 6(c), Cl.12.3 (vii)-creep requirements removed.

1. MATERIAL:

Specification	:	ASME (Latest as on the date of <i>Enquiry/PO, whichever is earlier</i>):
Carbon Steel (CS)	:	SA106 Gr B & C
Alloy Steel (AS)	:	SA 335 Gr P11, P12, P22, P91 & P92 (Code Case: 2179)
Stainless Steel (SS)	:	SA 312 Gr TP 316, TP 316L
Additional requirement	:	As listed below (Supplementary to <i>above material</i> specifications).
Pipe Size and Qty	:	As per <i>Purchase Order</i>

The billet/bloom shall conform to the chemical and process requirements of respective pipe specifications. The billet/bloom shall be sourced from IBR well-known steel makers or with inspection and certification by IBR authorized Inspecting Authority.

2. CHEMICAL COMPOSITION:

- 2.1 Ladle and Product Analysis: SA 106 Gr B: Carbon: 0.25% Max.
SA 106 Gr C: Thickness ≤ 20mm Carbon: 0.25 Max.
Thickness > 20mm Carbon: 0.30 Max.
SA335 GrP92: Si: 0.10-0.50%; Ni: 0.30max and Cu: 0.25max
- 2.2 All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity (Applicable for SS material only).

3. DIMENSIONAL TOLERANCES:

- 3.1 SA335 Gr P91, P92: For outside diameter (OD) controlled Pipes the tolerance on OD shall be: ±1% (Max: 4mm) of Nominal OD.
- 3.2 Other than SA335 Gr P91, P92: For outside diameter (OD) controlled Pipes the tolerance on OD shall be: ±1% (Max: 6 mm) of nominal OD.
- 3.3 ID specified pipes are specified by the maximum internal diameter and minimum wall thickness. The tolerance if not specified in the PO shall be ID: +0.0mm, -3.2mm & Thickness: +6.4mm, -0.0mm
Weight per metre: +10%, -5% on nominal weight **
** Nominal weight of ID pipe per metre shall be calculated as follows,

$$\text{Weight}_{\text{nom}} = (\text{ID}_{\text{nom}} + t_{\text{nom}}) * t_{\text{nom}} * 0.02466 \text{ kg/metre, where}$$

$$\text{ID}_{\text{nom}} = \text{ID}_{\text{max}} - 1.6\text{mm}; t_{\text{nom}} = t_{\text{min}} + 3.2\text{mm}$$

4. STRAIGHTNESS & POLYGONIZATION:

The Pipes shall not deviate from straightness by more than 1mm in any one meter and shall not be more than 6mm over the entire length *for Pipes of OD > 76.1mm*. A sharp bend at the end or kink and twist are not acceptable. These limitations are applicable for any given plane.

Also, for Pipes with OD ≤ 76.1mm, the pipes shall be made by process specified below:

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:101 Rev No: 18 Effective Date: 11/11/2017 Page: 2 of 4
Product: Seamless Steel Pipes (for Boiler And Piping)		

1. All pipes shall be cold formed in case of " t/D " ratios > 0.15 , where " t " is the specified nominal wall thickness and " D " is the specified nominal OD of the pipe.
2. Pipes may be cold formed or hot formed in case of " t/D " ratios upto and including 0.15.
3. The degree of polygonization (P), measured as indicated in Fig.1 & calculated using the below formula, shall not exceed 15% in both the above cases:

$$P = \{[\sum S_B - \sum S_A] / [0.135 \cdot (3D - \sum S_A)]\} \cdot 100$$

Where, P is the degree of polygonization in %
 D is the specified nominal OD of the pipe
 $\sum S_B$ is the sum of maximum pipe wall thicknesses measured at 6 locations 60 degrees apart and
 $\sum S_A$ is the sum of minimum pipe wall thicknesses measured at 6 locations 60 degrees apart.

Wall thickness shall be measured using profile projector/shadowgraph/digital scanner/any other suitable instrument meant for this purpose.

Definition of the measure points:

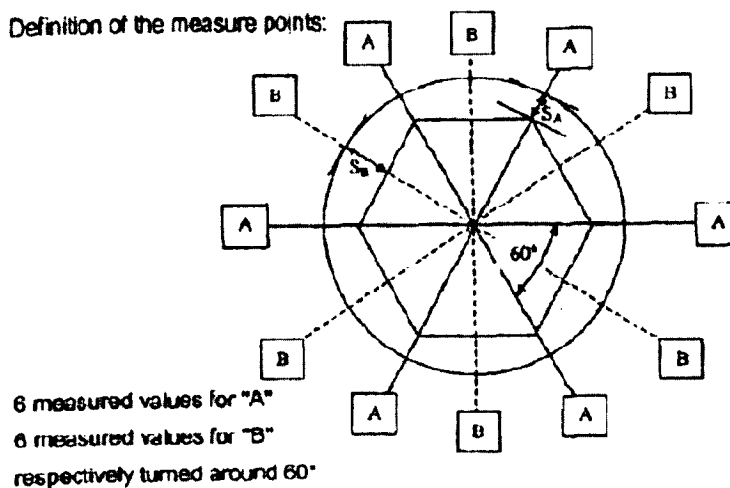


Fig. 1

5. HEAT TREATMENT:

The heat treatment temperatures and soaking time shall be reported in the test certificate.

5.1 CS: Hot Finished: OD $\leq 76.1\text{mm}$ no heat treatment required. OD $> 76.1\text{mm}$ shall be in Normalized condition.

CS: Cold Finished: All sizes – In sub critical annealed, fully annealed or in Normalised condition.

5.2 AS: All sizes – SA335 Gr P11, P12 & P22 – Either in Normalised and tempered or Isothermal Annealed condition.

5.3 AS: All sizes – SA335 Gr P91 & P92: All pipes Normalised as per *material* specification and Tempered at 750-780° C.

5.4 SS: All sizes – Solution Annealed condition as per *material* specification.

6. MECHANICAL TESTS:

a) As per specification. Quantum of test: As per specification – For each nominal size per heat per heat treatment batch. (Minimum 2 pipes for first 100 pipes and 1 per 100 or part thereof for pipes over 100 numbers, as per IBR).

b) For alloy steel pipes meant for fitting (As indicated in the Purchase order), test coupon shall be in normalised and tempered condition.

P91- TS: Min: 630MPa, Max: 850MPa; YS: (0.2% offset): 450MPa Min; Hardness (HB): Min: 195 Max: 250

P92- TS: Min: 630MPa, Max: 850MPa; Hardness (HB): Min: 190 Max: 250

P91, P92 hardness shall be checked on each pipe and values reported in MTC.

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:101 Rev No: 18 Effective Date: 11/11/2017 Page: 3 of 4
Product: Seamless Steel Pipes (for Boiler And Piping)		

7. NON DESTRUCTIVE TEST:

7.1 ULTRASONIC TEST : ASTM E213

Calibration: Axial 50 mm long V or Square notch, one in OD and the other in ID. Notch Depth: 5% of Max.Thickness.(Min. 0.3 mm, Max. 1.5mm).

For ID<16mm one notch in OD is enough. Scanning:Clockwise and Anti clockwise.

7.2 SS: Finished pipes 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 hour or 1 micro Sievert per hour.

7.3 Photomicrograph test for P91 & P92 pipes - Photomicrograph test shall be carried out from a specimen of pipe in the as finished condition for individual size (OD and wall thickness) per heat per heat treatment batch . Acceptance norms - The Material shall be free from any micro fissures. Microstructure shall show tempered martensite and also to be examined for any grain growth and delta ferrite (to be maintained within 3% for Gr92 and within 2% for Gr91 when measured as per VD TUV 1272). Photomicrograph with 400x (Min) magnification along with Photomicrograph report to be provided. The actual magnification and structure shall be indicated in the report.

8. FINISH AND REPAIR:

The Inside & outside surfaces of the pipes shall be free from any imperfections & defects like laps,seams,folds, cracks, pitting etc;. Localised imperfections, if any, may be removed by *grinding or skin machining* only, ensuring the wall thickness, inside and outside diameter *to provide workmanship like finish*. Local depressions or ground spots are not acceptable. Loose scales shall be removed by blast cleaning in both inside and outside surface. Repair by welding is prohibited.

9. MARKING: (In English only): *All mandatory marking shall be done as per material specification (latest).*

9.1 Details to be identified: On Each Pipe (1) PO Number (2) Maker's emblem/code (3) Specification & grade (4) *Code case, if applicable* (5) Heat number (6) Size (*OD x Thickness x Length, in mm*), (7) No.of pipes (8) Inspector's seal

- Upto OD 31.8 (Excl.) – Sl.No: 1 to 8 to be stamped on metal or plastic tag attached to bundle.
- OD 31.8 to OD 76.1 (Incl.) – Sl.No:1 to 6, 8 to be paint stenciled on each pipe, 1 to 8 to be stamped on metal or plastic tag attached to bundle.
- OD > 76.1- Sl.No: 2 to 6 & 8 to be hard stamped with round edged stamp at 100mm from an end of each pipe and 1 to 6 to be paint stenciled on each pipe.

9.2 Colour Coding: *Continuous* longitudinal colour coding shall be done on the entire length of all pipes, *without masking stencilling*. *Colour coding scheme shall be as per Procedure SIP: PP: 21 (latest).*

10. PRESERVATION:

All pipes except SS shall be applied with resin type rust preventive coating with visibility to stencilled details on outside and either with rust preventive coating or rust inhibitor inside. Thick black coating which camouflages the surface of the pipes is not permitted. SS pipes to be surface treated as per ASTM A380 both inside and outside. Ends to be closed with end caps for secured storage.

11. PACKING:

- 1) Thickness $\leq$ 2.5mm in boxes.
- 2) OD $\leq$ 159 mm in bundles.Others in loose condition.
Pipe bundles to be < 4 tons of equal no.of pipes,fastened with galvanised strap/ anti-rust coated (1x25mm.min.) for Carbon Steel & Alloy Steel and by Nylon strap for Stainless Steel at 2 ends & at 1m interval. Wooden pallets to cover pipes are not permitted.

12. INSPECTION AND CERTIFICATION (In English Only):

12.1 Products shall be inspected at works and the applicable IBR Form must be countersigned by the Inspecting Authority as indicated below:

Imported Items: Inspecting Authority approved by IBR for the Country of origin (To be concurred by BHEL before placing PO).

Indigenously Supplied items: *Director of Boilers/Chief Inspector of Boilers/Inspecting Authority approved by IBR, for the respective state.*

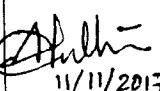
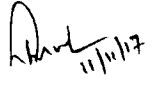
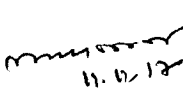
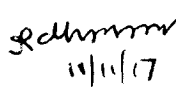
	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	Doc No: TDC:0:101 Rev No: 18 Effective Date: 11/11/2017 Page: 4 of 4
Product: Seamless Steel Pipes (for Boiler And Piping)		

12.2 Certification in IBR Form III-A for *finished pipes* from “IBR-Well Known Pipe Maker” or “Inspecting Authority”, as applicable, *shall* be submitted to **BHEL**. Also, certification in **IBR Form IV** for the raw material signed by “IBR-Well Known Steel Maker” or “Inspecting Authority”, as applicable, *shall* be submitted to **BHEL**. Refer to **BHEL Engineering Drawing: 4-03-000-00062 (Latest Rev)** for **MAWP values for various material grades & sizes at various temperatures**.

12.3 **Additionally**, Manufacturer’s Test certificate (MTC) (ORIGINAL in ENGLISH) with following details *shall* be submitted:

- Purchase Order No. (BHEL), TDC No. *and its Rev No*, Test certificate No. & *TC Date*, Size and Quantity-Melt wise.
- Specification and Grade with year of code, Code case number (*if applicable*), Heat Number, Steel & Pipe making process, chemistry including incidental elements-Ladle and product Analysis.
- Heat Treatment details with actual temperature and soaking time
- Mechanical test Results.
- For P91, P92 supplies – the Photomicrograph test report along with photomicrograph with 400X (min) magnification shall be furnished.
- Detailed N.D.E. report with reference norms, Acceptance standards and test results.

12.4 **For SS:** Measured Radioactivity levels shall be reported in the Mill Test Certificate *and shall be submitted to BHEL* (Not to be recorded in IBR Form).

 11/11/2017	 11/11/17	 11/11/17	 11. 11. 17	 11/11/17	 11/11/17
Abdur Rahman Sr. Engr/QA	G. Panneer Selvam DGM/QA	M. Nadanakumar AGM/MM	N. Kirubakaran SDGM/PE/FB	R. Dharmar AGM/QC	Amit Roy AGM/QA&BE
Prepared By	Reviewed by				Approved By

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:0:102 Rev: 16 Effective Date: 13/10/2017 Page: 1 of 6
Product: SEAMLESS STEEL TUBES (for BOILERS)		

Revision record:

Rev 08: 21.09.04: UT as per BS EN 10246-7, in lieu of ASTM E 213

Rev 09: 31/12/05: Cl 5.0 - mention of shape and size of tensile test specimen on TC introduces

Rev 10: 29/12/07: Cl 1.0, 3.0, 6.0, 7.0, 11.0 and 12.0 modified.

Rev 11: 19/05/09: Cl 8.0 – Modified. Cl 9.0 – Marking details included in line with material specification.

Rev 12: 08/06/11: Cl 1.0- SA 213 T12, T92 and T23 removed from this TDC. Cl 2.0 Process of Manufacture – Clarified. Cl 9.0- Stenciling and colour coding modified. Cl 12.0- Modified.

Rev 13: 04/07/11: Cl 6.0: Modified, Cl 9.0 – Marking: Correction made in the “Details to be identified”

Rev 14: 26/10/12: Cl 2.0, 6.0 and 12.0 modified

Rev 15: 19/02/2016: TDC: 0:124 requirements merged in this TDC. And Cl 1 modified; Cl 2 modified to include polygonization requirements; Cl 4– heat treatment temperature added for Gr 91; Cl 5– lot size for mechanical tests defined & additional requirements of Gr 23, 91 & 92 added; Cl 6, 7, 9 – modified; Cl 10 –Preservation requirements modified; Cl 11 – modified; Cl 12-changed as per latest IBR including MAWP requirements.

Rev 16: 13/10/2017: *Clause 1 & 12 modified to include raw material requirements and certification in IBR Form IV. Clause 5 (f) added to include creep requirements.*

1. MATERIALS

Specification: ASME (Latest as on the date of Enquiry/PO, whichever is earlier):

Carbon Steel (CS) : SA 192; SA 210 Gr. A1 & Gr. C

Alloy Steel (AS) : SA 209 Gr.T1, SA 213 Gr. T11, T12, T22, T23 (Code case: 2199), T91 and T92 (Code Case: 2179).

Stainless Steel (SS) : SA 213 TP 304H, 316, 321, 321H, 347H; UNS No: S30432 (Code Case: 2328, Super 304).

Additional Requirement : As listed below (Supplementary to above material specifications)

Size and Quantity : As per Purchase order

The billet/bloom shall conform to the chemical and process requirements of respective tube specifications. The billet/bloom shall be sourced from IBR well known steel makers or with inspection and certification by IBR authorized Inspecting Authority.

2. CHEMICAL COMPOSITION AND PROCESS OF MANUFACTURE

a) **Carbon Steel & Alloy Steel:** Tubes shall be seamless and made by processes specified below:

1. All tubes shall be cold formed in case of “t/D” ratios > 0.15, where “t” is the specified nominal wall thickness and “D” is the specified nominal OD of the tube.
2. Tubes may be cold formed or hot formed in case of “t/D” ratios upto and including 0.15.
3. The degree of polygonization (P), measured as indicated in Fig.1 & calculated using the below formula, shall not exceed 15% in both the above cases:

$$P = \{ [\sum S_B - \sum S_A] / [0.135 \cdot (3D - \sum S_A)] \} \cdot 100$$

where, P is the degree of polygonization in %

D is the specified nominal OD of the tube

$\sum S_B$ is the sum of maximum tube wall thicknesses measured at 6 locations 60 degrees apart and

$\sum S_A$ is the sum of minimum tube wall thicknesses measured at 6 locations 60 degrees apart.

Wall thickness shall be measured using profile projector/shadowgraph/digital scanner/any other suitable instrument meant for this purpose.

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:0:102 Rev: 16 Effective Date: 13/10/2017 Page: 2 of 6
Product: SEAMLESS STEEL TUBES (for BOILERS)		

Definition of the measure points:

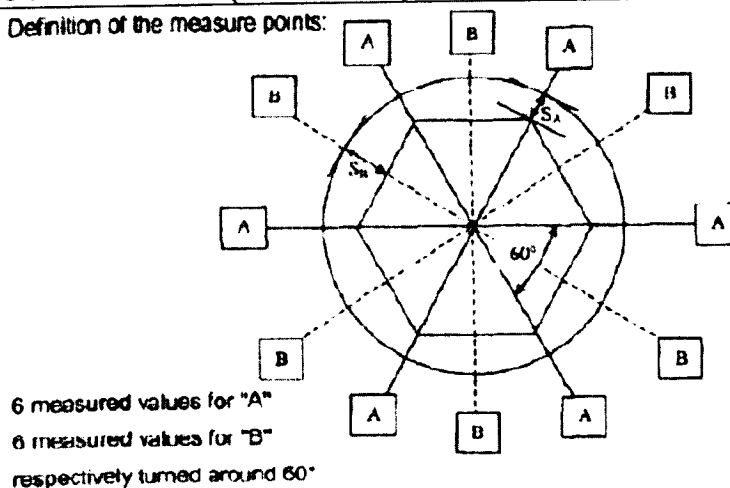


Fig. 1

Stainless Steel: Tubes shall be seamless and cold finished. All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity (Applicable for SS materials only).

b) Ladle & Product analysis is required for all steels. Chemistry shall be controlled as given below for below specified grades and for all other grades, it shall be as per applicable material specifications:

- Carbon Steel: Max. Carbon: SA 210 Gr.A1: 0.25%, SA 210 Gr.C: 0.30%
- For SA 213 T12: Aluminum: 0.025% max; Silicon: 0.20% min. on product analysis and the values shall be reported in the test certificate.
- Stainless Steel (SS): Boron: 0.01% max., Vanadium: 0.10% max.

3. DIMENSIONAL TOLERANCES

- For Cold finished tubes: CS: as per SA 450; for AS & SS shall be as per SA 1016.
Tolerance on thickness shall be: For OD $\leq$ 38.1 mm: -0% to +20% and For OD > 38.1 mm: -0% to +22%
- For hot finished tubes the tolerance shall be as follows:
For Outside Diameter: ± 0.4 mm.
For Thickness: -0% to +22% $t > 4.5$ mm
-0% to +24% t between 3.6 and 4.5 mm (both inclusive)
-0% to +28% $t < 3.6$ mm

4. HEAT TREATMENT

CS Hot finished: No Heat Treatment required.

CS Cold finished: Subcritical annealed (temperature $\geq 650^{\circ}\text{C}$), fully annealed or normalized.

AS: Normalized and Tempered. For SA213 T23, T91 & T92: Normalizing: 1050-1080°C & Tempering: 750-780°C. (The total thickness of the decarburized material (Both on ID & OD of the tube together) shall be measured once per Heat treatment lot. The measurement shall be determined from a representative sample that has been sectioned, polished, etched and examined at 100X. The total decarburization thickness shall not exceed 7% of the specified minimum wall thickness and shall be reported in the test certificate.)

SS: Solution Annealed condition as per material specification.

5. MECHANICAL TESTS

- As per specification. Quantum of test: As per specification – For each nominal size per heat per heat treatment batch (Minimum 2 tubes for first 100 tubes and 1 per 100 or part thereof for tubes over 100 numbers, as per IBR).
- Tension test required for SA 192. **Acceptance:** explanatory note in Specification. Hardness for SA 192: 120 HBW (max).
- For tension tests the shape and size of the specimen shall be mentioned on the Test Certificate (viz., Full

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:0:102 Rev: 16 Effective Date: 13/10/2017 Page: 3 of 6
Product: SEAMLESS STEEL TUBES (for BOILERS)		

tube tensile or strip tensile or round tensile).

- d) Additionally, the material supplied shall meet the requirements as below:
T91-Tensile strength:Min: 630MPa, Max: 850MPa; Yield Strength: Min: 450MPa; Hardness (HBW): Min: 195/Max: 250
T92-Tensile strength: Min: 620 MPa, Max: 850 MPa; Hardness (HBW): Min: 190 / Max:250
T23-Tensile strength: Min: 510 MPa, Max: 730 MPa; Hardness (HBW): Min: 150 / Max:220
- e) **Charpy Impact V-Notch Test at the mill as per SA 370 for SA 213 T23:**
- **Impact testing frequency** - minimum of two tubes per each heat treatment lot produced.
 - **V-Notch Impact test procedure & specimen size as per ASME SA 370.**
 - **Test temperature:** 20°C.
 - **Acceptance:** All specimens shall absorb energies at or above 40 ft-lb (55Joules) for a full size specimen (10mm thickness). The energy requirement is proportionally reduced for sub-size specimens as specified in ASME SA 370, Table 9.
 - The fracture surfaces on all specimens must exhibit 100% ductile appearance regardless of the absorbed energy values obtained.
 - Any specimen exhibiting an absorbed energy less than 40 ft-lb (55Joules) or less than 100% ductile behavior shall constitute permanent rejection of the entire lot of tubing.
- f) *Creep testing and reporting shall be carried out as indicated below.*

CREEP TESTING REQUIREMENTS

Creep testing is required as per IBR for all alloy & stainless steels of pressure parts & valves used in boilers (Fossil & HRSG/CFBC/BFBC Boilers) being erected in India. Creep testing shall be done in line with the following:

If starting raw material (Ingot/Billet) is sourced from Indian steel makers, supplier shall produce the Creep test report for each material grade being supplied by them as per the Table 1 given below:

Table 1. Creep Testing Requirements

Sl. No	Steel Type and Grade	Testing hours – min. (hrs.)	Testing Temperature (°C)	Stress Value (MPa)	% Elongation	No. of tests & Specimen Size
1	Alloy Steels (AS) – Grade 11, 12 and Grade 22	1000	550	100	shall be within 0.01%	Two no. of tests with preferably M10 round sample
2	Alloy Steels (AS) – Grade 91, 92 and 23	1000	600	120	shall be within 0.01%	Two no. of tests with preferably M10 round sample
3	All Stainless Steels (SS) grades	1000	600	110	shall be within 0.01%	Two no. of tests with preferably M10 round sample

- a) *Creep testing shall be done at National Metallurgical Laboratory, Jamshedpur or Corporate Research & Development Laboratory of Bharat Heavy Electricals Limited, Hyderabad.*
- b) *In case the tube supplier sources the steels from more than one source, the creep tests shall be done for all the sources from whom they would source the steels for BHEL supply.*
- c) *Creep testing shall be done as per ASTM E139 or BS EN ISO 204.*
- d) *Acceptance Criteria: The samples tested shall not rupture and shall meet the requirement of 1,000 hours of creep testing at indicated temperatures & stress values as per Table 1.*
- e) *Reporting: As per Table 2*

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:0:102 Rev: 16 Effective Date: 13/10/2017 Page: 4 of 6
Product: SEAMLESS STEEL TUBES (for BOILERS)		

Table 2. Suggested/Recommended Format for Reporting the Creep Testing Data:

Sl No	Description	Details
1	Name and Address of the Product Manufacturer	
2	Name and Address of the Steel Maker/Raw Material Supplier	
3	Product Form	
4	Material Specification & Grade (Code Case, if applicable)	
5	Heat/Melt No, Sl No (if applicable)	
6	Heat treatment details (Type & Temperature)	
7	Name and Address of Testing Laboratory	
8	Testing method/ Standard (ASTM E139 or BS EN ISO 204)	
9	Test Sample Size	
10	No. of test samples	
11	Temperature at which test is conducted (°C)	
12	Stress value observed (MPa)	
13	Test Start Date & Time	
14	Test End/Reporting Date & Time	
15	Test duration (hours of creep testing)	
16	% Elongation at the reporting/completion of test	
17	Test witnessed by (Name of Inspector & Agency)	
18	Test Result (Accepted/Not Accepted)	

6. NON DESTRUCTIVE TEST (In-house Automated Online Testing Only)

- Each tube shall be examined full section over its entire length.
Ultrasonic Testing: For thickness ≥ 3.6 mm to be conducted as per ASTM E213. Calibration: 2 axial 50mm long notches, one in outer surface and the other in inside surface. For OD < 30 mm, one notch in outer surface only. Notch depth: 5% of wall thickness (Min. 0.3 mm, Max: 1.5 mm). Scanning: clockwise & anti-clockwise.

Eddy current Test: For thickness < 3.6 mm, as per ASTM E309 /E426 as applicable, Calibration: Longitudinal notch depth: 5% of wall thickness (Min. of 0.3 mm) or drilled hole as per SA 106.
- SS: Finished tubes 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 hour or 1 micro Sievert per hour.
- The residual magnetism in all finished tubes, measured with field indicator, shall be limited to 5 gauss maximum.

7. HYDROSTATIC TEST

Extent of test: On all tubes of thickness < 3.6 mm as per SA 450 Cl 22.3 with S=80% of specified min. yield strength at room temperature. For others if specified in Purchase Order. Acceptance: No leak shall be permitted.

8. FINISH AND REPAIR

Inside and outside surfaces are shall be free from scales and defects like laps, seams, folds, cracks, pitting etc. Repairs by welding are prohibited. Surface defects can be removed mechanically, ensuring smooth curved surface and maintaining specified minimum thickness without affecting the workmanlike finish.

9. MARKING: (in English only)

- Details to be identified:** Tubes shall be marked repeatedly & continuously along its entire length with the following details as indicated below:
(1) PO Number, (2) Maker's emblem/code, (3) Specification & grade, (4) Code case (if applicable), (5) Heat number, (6) Size (OD x Thickness x Length, in mm), (7) No. of tubes, (8) Inspector's seal, (9) Condition: Hot finished or Cold Finished, (10) Tube Minimum Wall Thickness Designation (For SA 213 Spec only).
 - Below OD 31.8mm. (Excl.) – Sl Nos:1 to 10 to be stamped on metal/plastic tag attached to bundle.
 - OD 31.8-76.1mm. (Incl.) - Sl Nos: 1 to 6, 9 and 10 to be paint stenciled, repeatedly through the entire length of each tube. Also Sl.No:1 to 10 to be stamped on Metal/Plastic tag attached to bundle.

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:0:102 Rev: 16 Effective Date: 13/10/2017 Page: 5 of 6
Product: SEAMLESS STEEL TUBES (for BOILERS)		

- OD>76.1 mm- SI Nos: 2 to 6 & 8 to be hard stamped with round edge stamp at 100mm from both ends and SI No:1 to 6, 9 and 10 to be paint stenciled on each tube.

b) **Colour Coding:** Continuous longitudinal colour coding shall be done on the entire length of all tubes, without masking stenciling. If more than one color is to be applied on the tubes then, colour bands shall be adjacent. Colour coding scheme as per Procedure SIP: PP: 21 (latest).

10. PRESERVATION:

All tubes, except SS, shall have Rust Preventive Fluid (RPF) coating on the external surface as follows: The Tubes shall be coated with suitable RPF with minimum DFT of 50 microns. RPF coated steel surfaces shall be capable of withstanding salt spray corrosion test for minimum 1000 hours. The RPF coating should be sea worthy, ensuring freedom from corrosion when transported through sea voyage. The RPF coating shall get dried and shall be a transparent coating, so that it is possible to see the tube surface clearly as well as read any stenciled matter on tube surface. The inside surface of the tube shall be protected with volatile corrosive rust inhibitor. Rust preventive coating shall withstand at least one year storage at open yard from receipt of materials. The supplier shall stand guarantee for this. SS tubes to be surface treated as per ASTM A380 both inside and outside. Tube ends shall be closed with push type plastic end caps/plugs secured tightly to avoid entry of water during transportation and storage.

11. PACKING:

Tubes of thickness $\leq 2.5\text{mm}$, shall be packed in boxes and others in bundles. Tubes of thickness $\geq 6.5\text{ mm}$ and OD ≥ 88.9 can be shipped loose. Bundles to be ≤ 4 tons of equal no. of tubes, fastened with galvanized strap (1x25mm.min.) or annealed wire for CS & AS and by Nylon strap for SS at both ends & at 1m interval in between. Wooden pallets/cardboard to cover tubes are not permitted.

12. INSPECTION AND CERTIFICATION:

12.1 Products shall be inspected at works and the applicable IBR Form must be Countersigned by the Inspecting Authority as indicated below:

Imported Items: Inspecting Authority approved by IBR for the Country of origin (To be concurred by BHEL before placing PO.)

Indigenously Supply: Director of Boilers/Chief Inspector of Boilers/Inspecting Authority approved by IBR, for the respective state.

12.2 Certification in IBR Form III-B for finished tubes from "IBR-Well Known Tube Maker" or "Inspecting Authority", as applicable, shall be submitted to **BHEL**. Also, certification in IBR Form IV for the raw material signed by "IBR-Well Known Steel Maker" or "Inspecting Authority", as applicable, shall be submitted to **BHEL**. Refer to BHEL Engineering Drawing: 4-03-000-00061 (Latest Rev) for MAWP values for various material grades & sizes at various temperatures.

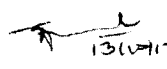
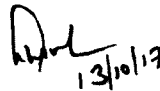
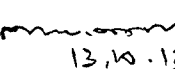
12.3 **Additionally, Manufacturer's Test certificate(MTC)** (ORIGINAL in ENGLISH) with following details shall be submitted to **BHEL**:

- a) Purchase Order No. (BHEL), TDC No and its Rev No, Test certificate No., Size and Quantity-Melt wise.
- b) Specification and Grade with year of code, Code case number (if applicable), Heat Number, Steel & Tube making process, chemistry including incidental elements-Ladle and product Analysis.
- c) Heat Treatment details with actual temperature and soaking time
- d) Mechanical test results
- e) Detailed NDE report with reference norms, acceptance standards and test results.
- f) Grain size, as applicable.
- g) Decarburization layer thickness
- h) Certification for compliance to residual magnetism
- i) Certification for minimum DFT of rust preventive coating
- j) **Creep test report for minimum of 1,000 hours as per Cl. 5(f) (only for IBR applications).**

	BHEL – Tiruchirappalli - 620014, India. Quality Assurance Department TECHNICAL DELIVERY CONDITIONS	DOC No: TDC:0:102 Rev: 16 Effective Date: 13/10/2017 Page: 6 of 6
Product: SEAMLESS STEEL TUBES (for BOILERS)		

In the MTC a clause for Certificate of Compliance (as per SA 1016) shall be added stating that: All materials/components supplied to Purchase Order meet all requirements contained in the PO, this Technical delivery conditions and applicable ASME specifications.

12.4 For SS: Measured Radioactivity levels shall be reported in the Mill Test Certificate and shall be submitted to BHEL.

 13/10/2017	 13/10/17	 13/10/17	 13.10.17	 13/10/17	 13/10/17
Abdur Rahman	G. Panneer Selvam	M. Nadanakumar	N. Kirubakaran	R. Dharmar	Amit Roy
Sr. Engr/QA	DGM/QA	AGM/MM	SDGM/PE/FB	AGM/QC	AGM/QA&BE
Prepared By	Reviewed by				Approved By