

**BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)
HEAVY PLATES AND VESSELS PLANT
PURCHASE DEPARTMENT
VISAKHAPATNAM - 530012
ANDHRA PRADESH(INDIA)

Contact Ph No :0891-6681301
Fax :0891-6681700
Email :ashishkmr@bhel.in
web : www.bhelviz.co.in

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Enquiry No (Coll-No)	Enquiry Date	Due Date for Quotation
H091700086	11.09.2017	26.09.2017
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order. Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date & Enq. Due date must be written on all three covers.		

Item	Description	Unit	Quantity	Delivery Quantity	Delivery Date
10	ROUND DIA 10.0MM - EN48A 150262470000 SIZE : DIA 10x300 LG-1 NO INSPECTION : BHEL TDC 404 REV. 13	KG	0.030	0.03	10.10.17
20	ROUND DIA 10.0MM - EN48A 150262470000 SIZE : DIA 10 INSPECTION : BHEL TDC MTC	KG	0.030	0.03	10.10.17
30	DIA 25.0 MM - IS2062GRA 150040270000 SIZE : DIA 25 INSPECTION : BHEL TDC : MTC	KG	125.000	125.00	10.10.17
40	ROUND DIA 40.0 MM -IS2062GRA 150040070000 SIZE : DIA 40 INSPECTION : BHEL TDC : MTC	KG	70.000	70.00	10.10.17
50	ROUND DIA 50.0 MM - IS2062GRA 150040230000 SIZE : DIA 50 INSPECTION : BHEL TDC : MTC	KG	410.000	410.00	10.10.17
60	CS ROUND BAR IS1570Gr40C8 D63 156275250000 SIZE : DIA 63	KG	4.778	4.78	10.10.17

The offers should reach us before 14:00 hrs on the due date of opening of the tender. The offers will be opened after 15.00 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**


S.J. TRIVEDI
मुख्य अभियन्ता (एम पी-क्या) भारत भारती इलेक्ट्रिकल्स लिमिटेड
Sr. Engineer (MP-KEY) Bharat Heavy Electricals Ltd.
भारत भारती इलेक्ट्रिकल्स लिमिटेड
Vizagapatnam-530012

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	INSPECTION : BHEL TDC : MTC				
70	ROUND 150MM SA105 (CERTIFIED) 156275470000 SIZE : DIA 150 INSPECTION : BHEL TDC : MTC	KG	998.640	998.64	10.10.17
80	DIA 32.0 MM - SA182F22CL3 153393160000 SIZE : DIA 32 INSPECTION: IBR TDC : 309 REV. 06	KG	0.600	0.60	10.10.17
90	SS FORGED ROUND BAR DIA 20 SA182 F304 156275100000 SIZE : DIA 20 INSPECTION : BHEL TDC : TS055	KG	5.000	5.00	10.10.17
100	SS FORGED ROUND BAR DIA 30 SA182 F304 156275110000 SIZE : DIA 30 INSPECTION : BHEL TDC : TS055	KG	16.647	16.65	10.10.17
110	SS FORGED ROUND BAR DIA 40 SA182 F304 156275120000 SIZE : DIA 50 INSPECTION : BHEL TDC : TS055	KG	61.652	61.65	10.10.17
120	SS FORGED ROUND BAR DIA 80 SA182 F304 156275130000 SIZE : DIA 80 INSPECTION : BHEL TDC : TS055	KG	7.122	7.12	10.10.17
130	SS HEX BAR A/F 17 SA182 F304	KG	0.199	0.20	10.10.17

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Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

திரு. ம. ச. சுவாமிநாதன்

एष ज्ञे त्रिवेदा ।

S.J. TRIVEDI

अभियन्ता (एम पी-कच्चा जाल)

~~Engineer (MP-Raw Mat.)~~

...हैबी इलेक्ट्रिकल्स लिमिटेड

Lat Heavy Electricals Ltd.

३. श्री. पी. विशालाक्षकृष्णन-५३० ७५२

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	156275150000 SIZE : A/F 17 INSPECTION : BHEL TDC : TS055				
140	SS HEX BAR A/F 35 SA182 F304 156275160000 SIZE : A/F 35 INSPECTION : BHEL TDC : TS055	KG	4.168	4.17	10.10.17
150	SS HEX BAR A/F 50 SA182 F304 156275170000 SIZE : A/F 50 INSPECTION : BHEL TDC : TS055	KG	3.399	3.40	10.10.17
160	SS HEX BAR A/F 63 SA182 F304 156275180000 SIZE : A/F 63 INSPECTION : BHEL TDC : TS055	KG	4.048	4.05	10.10.17
170	ROD DIA 63 - SA182F91 153394030000 SIZE : DIA 63 INSPECTION : IBR TDC : 404 REV. 13	KG	7.341	7.34	10.10.17
180	DIA 32.0 MM - SA479TY304(CERT) 150241940000 SIZE : DIA 32 INSPECTION : BHEL TDC : MTC	KG	195.990	195.99	10.10.17
190	DIA 36.0 MM - SA105 153392800000 SIZE : DIA 36 INSPECTION : IBR TDC : 309 REV. 06	KG	4.492	4.49	10.10.17
200	DIA 50.0 MM -	KG	9.850	9.85	10.10.17

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Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

Yours faithfully,

Eniwa

S.J. TRIVED!

अभिषेक (एम पी-केचः जाल)
मानावर (MP-Raw मदी.)
हेवी इलेक्ट्रिकल्स लिमिटेड
at Heavy Electricals Ltd.
पी.पी. सितावनकुमार-530 012



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	SA182F12CL2(CERT) 150392420000 SIZE : DIA 50 INSPECTION : BHEL TDC : 309 REV. 06				
210	DIA 20.0 MM - SA479TY304(CERT) 150241930000 SIZE : DIA 20 INSPECTION : BHEL TDC : MTC	KG	78.960	78.96	10.10.17

General Note:

SUPPLY OF CS/SS/LAS ROUND BARS / HEX BARS.

Enclosures:

1. ANNEXURE-I [MSE]
2. ANNEXURE-II [COMMERCIAL TERMS AND CONDITIONS]
3. ANNEXURE-III [GST TREMS AND CONDITION]
4. SPECIAL TERMS AND CONDITION
5. DETAIL OF FORGED FLANG
6. TDC 404 REV.11
7. TDC TS 055
8. TDC 309 REV.06

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

S.J. TRIVEDI

अभिषेक (एन पी-रक्षा बाल)
Engineer (MP-Raw Matri.)
भारत भारी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.
वी.पी. विस्तारपट्टनम-530 012

Certificate by Chartered Accountant on letter head

This is to Certify that M/s.....
(hereinafter referred to as 'Company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part—II) Dtd:
Category: (Micro/Small). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e.. original cost excluding land and building and the items specified by the Ministry of Small Scale industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs..... Lacs.
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other Items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs..... Lacs.

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs for..... Micro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is..... (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name:

Membership number:

Seal of Chartered Accountant

ANNEXURE –II
COMMERCIAL TERMS AND CONDITIONS

VENDOR SHOULD INVARIABLY ENCLOSE THIS FORMAT DULY FILLED TO THE QUOTATION. OTHER WISE, THE OFFER IS LIABLE TO BE REJECTED.

BHEL HPVP REQUIREMENT

**VENDOR
COMMENTS**

1. Vendor should categorically indicate confirmation of all the points of Technically delivered condition and commercial term and Condition with signature and stamped at the bottom of each document and submit the same along with Un-priced technical Bid. Offer of those who do not confirm compliance of all terms and condition are likely to be rejected.

2. Vendor should confirm that no deviations in the tech. specifications, delivery conditions etc., will be asked if order is placed.

3. Vendor should confirm that the quoted prices should be firm without any variations till the end of complete execution of order.
NO REVISION OF PRICES WILL BE ENTERTAINED AFTER TENDERS ARE OPENED.

4. Vendor should confirm that any statutory variations in the rate of taxes / duties will be applicable only within the contractual delivery period.

5. YOUR OFFER SHOULD INDICATE THE FOLLOWING:

- | | |
|--|----|
| 1. Price Basis : FOR-BHEL-HPVP, Visakhapatnam | 1. |
| 2. Packing & Forwarding Charges (To be included in the offered Price) | 2. |
| 3. Testing Charges(To be included in the offered Price) | 3. |
| 4. GSTN ID | 4. |
| 5. HSN CODE | 5. |
| 6. MAKE OF ROUND BAR | 6. |
| 7. Quantity tolerance is not applicable. Payment will be on Theoretical/Ordered weight basis only | 7. |

6. Payment terms: 100% payment shall be made within 45 days from the date of receipt and acceptance of materials at BHEL. However, GST portion of invoice shall be released only upon

1. Vendor declaring the invoice in his GSTR-1.
2. Receipt of Goods and Tax Invoice by BHEL.
3. Confirmation of payment of GST thereon by vendor on GSTN Portal.

Any deviation in the above payment terms will attract loading as mentioned below.
"Base rate of SBI (as applicable on the date of techno commercial bid opening) + 6% shall be considered for loading for the period of relaxation sought by bidder")

Note: Offers with Payment against Proforma Invoice / Advance payment / LC are liable to be rejected.

7 Delivery Period: The acceptable Delivery period shall be within 2 weeks to 8 weeks from date of Purchase order to the date of LR or Invoice whichever is later.

Loading Factor :

The offer which do not confirm to 2 weeks of delivery period but are within 8 weeks of delivery period shall be loaded for delayed delivery beyond 2 weeks @ 0.5% per weeks or part thereof on the offered basic value.

Any offer quoting beyond 8 weeks of delivery shall be summarily rejected

8.	L.D. CLAUSE: Delivery is the essence of this contract. In the event of your failure to ship the materials within the stipulated delivery period LD @ 1/2% per week of delay to a max of 10% on total order value will be applicable. Date of LR/Invoice whichever is later shall be considered for LD calculation purpose. In case of delay, you should deduct applicable L.D and negotiate the documents for balance amount only. IN CASE OF LD RECOVERY, THE APPLICABLE GST SHALL RECOVER FROM THE SUPPLIER. Any deviation from the above LD clause, loading shall be applied to the extent of relaxation sought to which it is not agreed by the bidder at offered basic value.	
9.	Rejected materials if any after receipt of material at our end shall be replaced by Supplier at free of cost(inclusive of all testing , inspection ,TPI, service charges etc) up to destination immediately without any extra freight from defect notification date.	
10.	INSPECTION : A) FOR ITEM NO 10 TO 70 ,90 TO 160, 180, 200 & 210: By M/S BHEL/ TPIA at your works & inspection charges to BHEL A/C. When material is ready for Inspection, Supplier need to register ON LINE for offering for Inspection on BHEL Web site (www.cgir.bhel.in) BHEL authorized TPIA will attend & carry out Inspection. Supplier should also inform us thru mail regarding Readiness of material & informing to carry out inspection.BHEL representative from unit or CQ is authorized to carry out Audit along with TPIA at vendors work before clearing item for Dispatch. B) FOR ITEM NO 80,170,190 : BY IBR, IBR CHARGE SHOULD BE INCLUDED IN QUOTED PRICE.	
11.	VALIDITY OF QUOTATION: 60 Days from the Technical Bid Opening.	
12.	BHEL HPVP reserves the right to Reduce / Increase the quantities mentioned in the enquiry. Vendor shall agree to accept Item wise order / Part Quantity of each item / Part Order.	
13.	BHEL reserve the right to negotiate and Refloat the tender if the lowest Offered price is not found competitive.	
14.	BHEL HPVP reserves the right to cancel the Enquiry / Tender at any stage without assigning any reasons thereof. And BHEL HPVP reserves the right to reject or accept one or any offer without assigning any reason.	
15.	RISK PURCHASE: The Delivery Period stated in the order should be realistic and should be strictly adhered to. If the deliveries are not maintained and on the account as per order this company is forced to buy the materials elsewhere any loss or damage that company may sustain their by the purchaser is entitled to procure the material at the risk and cost of the seller.	
16.	ARBITRATION: Not withstanding anything contained in any document what so ever, all questions, matters, disputes and claims relating to and arising out of this contract, shall be referred to sole arbitrator, who shall be appointed by the Head of the Unit, BHEL HPVP, Visakhapatnam at his sole discretion. Such appointment of arbitrator shall not take place unless and until a written request for appointment of arbitrator from any of the parties to the contract has been received by the Head of the Unit as aforesaid. The arbitrator shall give his reasoned award. It is a term of this contract that no person other than a person appointed by Head	

	arbitration shall be such place as may be fixed by the arbitrator at his sole discretion .The award of arbitrator shall be final, conclusive binding on all parties to the contract.	
17.	JURISDICTION: Not out of this contract including that arise out of arbitration and bank guarantees, shall be initiated, filed and tried only in the courts, tribunals and forums, situated at and having territorial jurisdiction over Visakhapatnam even though such jurisdiction also vests in courts, tribunals & forums situated elsewhere in the country .	
18.	As per the Instructions from Government of India Ministry of Industry vide Ref.No:6(3) / 89 - Fin - III Dated.11 April 1989, the Indian agent of Foreign suppliers should furnish a copy of his valid agreement with the supplier indicating the details of commission payable either in foreign currency or in Indian Rupees.	
19.	INSURANCE: By supplier only. Insurance charges to be included in offered Price.	
20.	Supplier Should guarantee against all design ,manufacturing and for performance for a period of 18 month from the date of Last dispatch or 12 months from date of Commissioning whichever is earlier.	
21.	In case of order, Price should be firm till execution of order.	
22.	No overdue Interest will be payable by BHEL to either supplier or His Bankers.	
23.	Dimensions of the consignment [LXWXH/ Gross Wt/ Net Wt. to be indicated. You may enclose separate sheet if space is not adequate.	
24.	Reverse Auction : As per RFQ Clause No. 05 of Special Terms and condition	

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: anata@bhel.in

SPECIAL TERMS & CONDITIONS

CATEGORY OF TENDER: Two-Bid System/Open Tender

ENQ NO . H091700086 DATE 11.09.2017

Sub: SUPPLY OF ROUND BARS/HEX BARS.

1. ROUND BARS is required at M/S BHEL-HPVP, Visakhapatnam. Vendor shall quote the freight charges inclusive of Insurance for FOR-BHEL-Visakhapatnam basis
2. Round Bars shall be supplied as per Technical Delivery Conditions (TDC) indicated against each Items.
3. **Test Certificates** : Original/Copy of relevant test certificates shall be endorsed by M/s. BHEL Authorized Inspection agency. Material specification and Dimensional tolerance strictly as per applicable TDC. Original LAB report of Government Approved Laboratory shall be provided in case of outside Testing.
4. Supply of CS/LAS/SS Round Bar in standard length of 4-6 meter wherever applicable.
5. **Quantity tolerance is not applicable. Payment will be on Theoretical/Ordered weight basis only.**
6. CEBG &PBG NOT APPLICABLE.
7. Vendor shall submit Categorical Confirmation on Commercial Terms and Conditions (CTC) as per Annexure-II & ANNEXURE-III[GST TERMS AND CONDITION] enclosed to the Enquiry. The offers of those Vendors who do not comply with all the Clauses of Commercial Terms and Conditions (CTC) in total are likely to be rejected.
8. **Price Evaluation**: Price shall be considered on Landed Cost basis (Total cost to BHEL). Landed cost shall be worked out on price quoted including Quantity, P&F charges, Testing & Inspection charges, Freight, Transit Insurance, Loadings on Deviations, Customs duty, loading as per customs notifications, GST after taking out Input Tax Credit as applicable. The Price comparative statement shall be worked out on overall Landed cost basis (Total cost to BHEL) for ITEM WISE L1 BASIS.
 - a) The comparative statement of the price prepared on the reference date shall remain firm throughout the period. Any change in duty and tax structure during execution of the contract will not be considered for the re-ranking of vendors.
 - b) The lowest price received against BHEL, HPVP tender need not be commercially lowest price (L-1). BHEL, HPVP reserves the right to negotiate the same.
 - c) BHEL, HPVP reserves the right/option to REFLOAT the tender if L-1 price is not the lowest acceptable price to BHEL, HPVP.
 - d) The prevailing Exchange rates (TT selling rate of SBI) on the date of opening of Technical Bid shall be considered for Price Evaluation of import offers. If the date of opening of Technical bid happens to be a bank holiday or no forex, then the forex rate as on previous bank (SBI) working day shall be considered.

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9. **Reverse Auction:** BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non consideration of their bids, in case BHEL decides to go for RA.

Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. **The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.**

If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).” As a reminder to the bidders, system will flash following message (in RED Color) during the course of 'online sealed bid':

“Bidders to submit online sealed bid less than or equal to their envelope sealed bid already submitted to BHEL”

6. SPECIAL PROVISION FOR MICRO AND SMALL ENTERPRISES(MSE) - APPLICABLE FOR INDIAN MANUFACTURER ONLY:

- i) As per the public procurement policy notified by the Central Government ,Micro & small Enterprises (MSE) participating in the tender , quoting Price within Price band of L1 + 15 % will be allowed to supply a portion of requirement subject to acceptance of L1 price in a situation where L1 price is from someone other than a Micro & small enterprise & such Micro and small Enterprise shall be allowed to supply up to 20% of Quantity .In case of more than one such MSE, the supply shall be shared proportionately.
- ii) 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
- iii) Special provision for Micro and Small Enterprises owned by SC or ST:Out of 20% tendered quantity reserved for MSE suppliers,4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs. In event of failure of such Micro and Small enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 4% sub-target for procurement earmarked MSE owned by SC / ST entrepreneurs shall be met with other MSE enterprise/s.
- iv) MSE Suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five Years from the date of issue of acknowledgement in EM-II) OR valid NSIC certificate OR EM II certificate along with attested Copy of a CA certificate (Format

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enclosed as per Annexure –I where deemed validity of EM II certificate of five years has expired) applicable for the relevant financial year (latest audited), Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents is not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted Officer. This provision for MSE will apply subject to the condition that the participating MSE meets the tender requirements.

- v. In case of any change in the MSE status of the bidder, it shall be the responsibility of the bidder to notify the change as a part of the bid document: If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the bidder as per the procurement policy of BHEL.
- vi. All Micro and Small Enterprises (MSEs) who are having Udyog Aadhaar Memorandum shall also be provided all the benefits available for MSEs under the Public Procurement Policy for Micro and Small Enterprises (MSE), order 2012.
10. **Exchange Rate:** For evaluation, the foreign exchange rate will be considered as on date of opening the Technical Bid. If the relevant day happen to be a bank holiday/Forex day, then the Forex rate as on previous Bank(SBI) working day shall be taken.
11. BHEL reserves the right to cancel the Enquiry / Tender at any stage without assigning any reasons thereof. Also BHEL reserves the right to reject or accept one or any offer without assigning any reason.
12. **Fraud Prevention Policy:** The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice."
13. **Linking up of Old issues:** In case if you have any outstanding problem with earlier supplies, you should not link up against this enquiry or PO at later stages.
14. **GUIDELINES FOR SUSPENSION OF BUSINESS DEALING WITH SUPPLIERS:**

The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com.

1.0 Integrity commitment, performance of the contract and punitive action thereof:

1.1. **Commitment by BHEL:** BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.

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1.2. Commitment by Bidder/ Supplier/ Contractor:

1.2.1. The bidder/ supplier/ contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.

1.2.2. The bidder/ supplier/ contractor 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 and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.

1.2.3. The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.

If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extant guidelines of the company available on [www. bhel.com](http://www.bhel.com) and/or under applicable legal provisions.

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BHEL, Tiruchirappalli – 620014.	Quality Assurance	Technical Delivery Conditions
Product: Carbon, Alloy & Stainless Steel Forgings (Boilers And Valves)		
Document No.: TDC:0:404	Rev. No.: 13	Effective date: 17/11/2014
		Page 1 of 2

Revision Record:

Rev 09: New materials F23, F91 & F92 requirements added in CI 1.0, CI 2.0, and CI 4.0 to CI 6.0. CE marking certification clarity included in CI 10
 Rev 10: CI 1 F6a Class 2 added, Code case corrected. CI 2: Steel makers names removed and requirement for creep testing added as per IBR Reg 4.
 CI 4 Tempering temperature and soaking time modified for SA 182 F91, F92 & F23. CI 4 & 10: Photomicrograph requirement added for F91 & F92 forgings. CI 2, 6 & 10 modified for SS. CI 5: Bend test Clarified, CI 6: Wet MPI added.
 Rev 11: CI 2 Pt 3, 4, 5 modified. CI 6 – Wet MPI for CS, AS added, CI 10.1 – IBR Forms indicated
 Rev 12: CI 1, 2, 4, 6 and 7 – requirements for grades SA 182 F1, SA 336 F1, F12, F22 CI 3 and F91 added (for Neyveli Project). Creep test criteria in-line with BHEL R&D included CI 2 Pt 8 modified. CI 6 Pt 1 – SA388 changed to ASTM A 388 based on ASME Sec II Ed 2013.
 Rev 13: CI 2 CI 4 CI 10 CI 12 modified

1. MATERIAL

Specification: ASME (Latest on date of Purchase Order (PO)): (ASTM also applicable for non pressure parts / Valves)
 Carbon Steel (CS) : SA 105, SA 350 LF 2
 Alloy Steel (AS) : SA 182 F6a Class 2, F6a Class 3, F12 Class 2, F22 Class 3, SA 182 F23 (Code case: 2199),
 SA 182 F91 & SA 182 F92 (Code Case: 2179), SA 182 F1, SA 336 F1, SA 336 F12,
 SA 336 F22 CI 3, SA 336 F9J
 Stainless Steel (SS) : SA 182 Gr. F 304, 304L, 316, 316L, 316LI, 321, 321H, 347 & 347H;
 AISI 410 for TOA Gland and bushings.
 Additional Requirement : As listed below (supplementary to Specification)
 Size and Qty : As per Purchase order & Drawing.

2. CHEMICAL COMPOSITION & PROCESS

- 1) Melting: fully killed.
 Product analysis per heat: CS: C≤0.25%, AS: SA182 F23: Si: 0.25-0.50% & Cu: 0.25max
 SA182 F92: Si: 0.10-0.50%, Ni: 0.30 max & Cu: 0.25% max
- 2) Raw material Steel for IBR forging items to be inspected at Mill & test certificate countersigned by IBR approved Authority, if the mill is not approved under IBR as well known steel maker.
- 3) Forging: to ensure uniformity of structure & strength with reduction ratio in area 4:1 min from ingot to final forging, close to final size & shape. Flow lines to be parallel to axis of openings. Forged items ordered to this TDC shall be forged to the nearest shape before machining to final dimensions as per respective drawing.
- 4) Blooms / Billets used for forgings (Side Length, Dia) ≥ 50mm shall be UT tested. For Acceptance Norm refer CI 6.0. For finished bars this can be done at Final stage.
- 5) SS: All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity

3. DIMENSIONS AND TOLERANCES

Tolerances as per Drawing. Untoleranced dimensions for valve components as per VL:STDC:023(latest). Others as per drawing

4. HEAT TREATMENT(HT)

- 1) CS: SA 105: Normalised, SA 350 LF 2: Normalised at 880-900 °C & Tempered at 620-640 °C
 AS: Normalised and Tempered.
 For SA 182 F91, F92 & F23, SA336 F91 Normalising temperature : 1050-1080 deg C & Tempering temperature : 730-780 deg C.
 AISI 410: Supply in Quenched & Tempered condition as below.
 Quenching at 955-1010°C in air or water or oil or Polymer. Soaking 30 mts/inch maximum thk. Tempering at 663°C.min. Soaking : 60 mts/inch maximum thickness and air cool.
- 2) Photomicrograph test for F91 & F92 forgings - one per heat treatment lot per size and reported in test certificate.
Acceptance – The material shall be free from any micro fissures. Microstructure shall show lathe tempered martensite and also to be examined for grain growth. Photomicrograph with 500x (Min) magnification along with Photomicrograph report to be provided. The actual magnification and result of actual microstructure shall be certified/indicated.

5. MECHANICAL TESTS

- 1) Extent of test: for each size/heat/HT batch from sample product or identical test coupon.
- 2) Additional requirements for SA182 F23, F91 & F92:
 F91: Yield: (0.2% offset): Min 450MPa; Tensile: Min 630MPa, Max 850MPa; Hardness(HB): Min 191, Max 250
 F92: Tensile: Min 655MPa, Max 850MPa; Hardness(HB): Min 196, Max 250
 F23: Tensile: Min 510MPa, Max 850MPa; Hardness(HB): Min 150, Max 220
 AISI 410: Hardness 197-235 BHN. No other mechanical test required.
Additional requirements of tests: (Other than AISI 410 Only)
- 4) Bend test: Acceptance as per IBR
 CS: Sample 19mm. Thick(t) x 25.4mm width to be bent 180 deg. around mandrel of radius 6.35 mm.
 AS, SS: Sample 19mm. Thick(t) x 25.4mm width to be bent 180 deg. Around mandrel of radius = 1.5 x t
- 5) Impact test for QCNR Valves & CRHNR Valves: CS, AS and SS: 1 / HT batch. As per ASTM A 370. 2mm Charpy-U notch, at Room temperature. Acceptance: Avg of 3 specimens: 36J, Single Min: 24J
- 6) CE-marking items Charpy- V impact test at 20 deg.C as per ASTM A 370,
 Acceptance : Avg : 40 joules, Min. single value: 27 joules.

6. NON DESTRUCTIVE TEST

- 1) Extent of test: for each product. Stage of test : After heat treatment.
- 2) UT: As per ASTM A388 - All finished forgings of dia/WT = / > 50mm. All Body & yoke of special class valves.
 All forgings of SA 182 F91, F92 & F23, SA 336 F91: Acceptance: ASME Sec.VIII Div. 2 CI.3.3.4.
- 3) MPI: 100%: As per ASTM E 709. Linear Indications like cracks, folds & other injurious defects are unacceptable.
 Dry MPI/ Wet MPI: CS, AS (other than SA182 F91, F92, SA 336 F91): all sizes
 Wet MPI: SA182 F91, F92, SA 336 F91: all sizes.
- 4) LPI: for SS: 100%: ASTM E165, No linear indications acceptable.
- 5) SS: Finished forgings shall be checked for radioactive contamination and reported. Survey meter shall be used to measure at 5cm near the surface. Acceptance limits: Shall be less than 0.1 milli Rontgen (MR) per hr or 1 micro Sievert per hr.

7. WORKMANSHIP AND FINISH

Forged items to spec SA336 shall be machined in the inside surface as it is meant for steam application. Items to be proof machined as per drawing or shot blasted for CS/AS, Pickled & passivated as per ASTM A 380 for SS, & be free from scales & defects like laps, seams, folds, cracks, etc. Machined items (except SS) to be coated with a layer of transparent rust preventive before despatch.

8. REPAIR

Repairs by fusion welding are prohibited. Surface defects can be removed by mechanical means and defective areas smoothly dressed up with the adjacent surface. Minimum thickness after repair to meet drawing / Specification.

9. MARKING AND PACKING

Details of stamping on each item with low stress stamps: Heat number, Specification & grade, Maker's emblem/code & Inspection Authority's seal. Forgings to be properly packed and despatched to avoid damage during transit.

10. INSPECTION AND CERTIFICATION

10.1 The inspection and tests to be witnessed by an IBR approved inspecting agency, in case the Forge shop is not recognised as a "Well known Forger" under IBR. IBR Form III G countersigned by applicable inspection agency and Test certificate with following details, shall accompany the product (including proof machined). Well known Forger shall provide IBR Form III F and Test certificate with following details, shall accompany the product (including proof machined):

1. Purchase Order No.(BHEL),TDC No. & Test certificate number.
2. Specification, Grade with applicable year of code, Heat Number, Drawing No.,Quantity & Size
3. Supplier of the steel used in making the finished product – Well known steel maker IBR Form IV & others Form IVA
4. Melting & forging process, Chemistry including incidental elements - Heat wise.
5. Heat treatment details of the material and test bars. For F91, F92 supplies – Photomicrograph at 500x resolution.
6. Mechanical test results, NDE test results with reference & acceptance standard.
7. Repair details if any, Certified copy of TC for starting material.
8. For SS: Measured Radioactivity levels shall be reported in the Mill Test Certificate. (Not to be recorded in IBR Form)

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

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

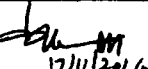
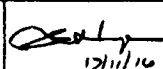
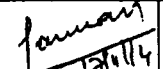
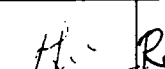
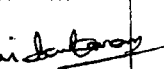
11. AUDIT CHECKS AT BHEL

BHEL reserves the right to carry out audit checks for chemistry, HT condition, mechanical test and NDT on representative test bars or job. Supplies found defective during check or subsequent processing at BHEL are liable for rejection.

12. END USE

Valve bodies, bonnets, discs, socket ends, body guides etc., Pressure part fittings in boilers & low, high temperature service like discs, socket weld tees, ells, weld neck flanges & stubs (except drum nozzles) meeting IBR, ASME Section I, ASME B16.34 and API.

Non pressure part items in boilers and valves: For these, requirements on starting material, bend test and inspection by IER are not required.

					
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Prepared	Reviewed			Approved	

**PURCHASE SPECIFICATION OF CARBON STEEL, LOW ALLOY STEEL AND STAINLESS STEEL
FORGED COMPONENTS FOR In-house 13 KL LAR TANK, Customer No. 0001**

TS 055, REV.0

- 1) Scope : This specification covers the Technical Delivery Conditions for Purchase of CS , LAS & SS forged Components. The material should strictly conform to these requirements, in addition to the standard indicated in the material indents/Purchase Order in all respects.
- 2) Forgings shall be supplied in full machined condition as per standards/drawings indicated in the M.I /ENQ. / P.O.
- 3) Gasket face and bore shall be as specified in the M.I / ENQ. /P.O.
- 4) Inspection: AS per M.I /ENQ /P.O.
- 5) Certification: The supplier shall furnish 6 copies of the Manufacturer's TC attested by the Inspector. The supplementary requirements if any also shall be certified. The test certificate shall be sent by mail in advance for scrutiny and inspection at the time of receipt of materials.
- 6) Marking: Each forging shall be legibly identified by impression stamping as required by the product specification and para 16 of SA 788. In addition P.O.No. /Item .No. & M.I.No. are to be stamped.
- 7) Packing: Where no specific packing instructions are given in M.I /ENQ. /P.O, all flanges shall be suitably packed to avoid damage during handling / transit and storage.
- 8) Supplementary Requirements : As specified in M.I /ENQ. /P.O.

PREPARED

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02/05/16

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APPROVED

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02/05/16