

Enquiry No 4102100019 dt 13.09.2021
Procurement of Seamless Forged Y-Piece (SA105 & F92)

Dear Sir / Madam,

Sub: Procurement of Seamless Forged Y-Piece (SA105 & F92) as per BHEL Enquiry- 4102100019 dt 13.09.2021.

We are pleased to inform that Indigenous Limited Tender Enquiry has been floated for the “**Procurement of Seamless Forged Y-Piece (SA105 & F92)**” as per BHEL Enquiry No 4102100019 dt 13.09.2021. Prospective suppliers are requested to submit their offer thru BHEL’s E-Procurement portal (<https://eprocurebhel.co.in/nicgep/app>) in Two Parts basis (Part I- Techno-Commercial bid; Part II- Price bid) on or before **15:00 HRS IST** on **04.10.2021**. Part I bid will be opened on **16:30 HRS** on the tender due date.

All corrigenda, addenda, amendments, time extensions, clarifications etc (if any) will be hosted on BHEL’s E-Procurement portal, BHEL’s tender notification (<http://www.bhel.com>). Such corrigenda, addenda, amendments, time extensions, clarifications etc will not be published in newspapers or any other media. Bidders shall regularly visit the above websites to keep themselves updated.

The following are enclosed for information-

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| 1.0 Techno commercial requirements | 6.0 Applicable items list |
| 2.0 Technical Delivery Conditions | 7.0 Annexure A- General Terms & Conditions |
| 3.0 Quality Plan | 9.0 Make in India declaration format |
| 4.0 Technical Deviation Format | 10.0 Drawings |
| 5.0 Packing Procedure | |

Bids on Two Part basis shall be submitted in line with the Terms & Conditions of the NIT. Care shall be given to submit the following documents along with Part I offer without fail-

- Technical deviation sheet (in case of any deviations)
- UDHYAM certificate and Make in India declaration in formats attached (in case purchase preference is applicable)

Any clarification on technical specifications can be obtained from BHEL before tender opening. Suppliers are welcome to have pre-bid meeting with BHEL Engineers for better understanding our requirements. Please note that as per BHEL’s Policy, **BHEL cannot allow price impact post Part I opening for the requirement / scope of supply which is a part of specifications of our Enquiry.** Hence, please read specification / documents thoroughly and submit your offer as per specifications of Enquiry. In case of any query / un-clarity on any of the clause / requirement of specification, please get them clarified from BHEL before submission of offer. No deviation & request regarding un-clarity / contradictory conditions / ambiguity of specifications would be entertained after opening of Part I bid. Vendors are required to thoroughly understand the scope of supply and submit their quotation before the Enquiry due date indicated above.

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In the event of any Technical or Commercial queries, the same may please be addressed to the following concerned before Part I opening-

- Sandeep, Sr. Engineer / Purchase- sandeepj@bhel.in, +91-9445159877, +91-044-28161315
- Shreelekha S Chandar, DM /Purchase -shreelekha@bhel.in, +91-044-28161385

In the event of any queries during submission of the tender thru BHEL's E-Procurement portal, you may pls contact-

- EPS Customer Care- Bhel.Support@abcProcure.com, +91-79-68136809/849/871/823/872

General Note-

- BHEL reserves the right to increase or decrease the tendered quantity and split the tendered quantity. BHEL reserves the right to negotiate or re-float the tender opened if L1 price is not the lowest acceptable price to them inter-alia other reasons.
- One agent cannot represent two or more suppliers or quote on their behalf in a particular tender. If so found at any stage, BHEL Piping Centre is likely to cancel bids of such suppliers. Further, such Indian Agent is likely to be de-listed (Black listed for business from BHEL). Any agent representing the supplier shall upload agency agreement along with the part-I bid of the tender.
- In order to protect the commercial interests of BHEL, it becomes necessary to take action against suppliers / contractors by way of suspension of business dealings, who either fail to perform or are in default without any reasonable cause, cause loss of business / money / reputation, indulge in malpractices, cheating, bribery, fraud or any other misconduct or formation of cartels so as to influence the bidding process or influence the price etc. Suspension of Business Dealings could be in the form of "Hold" or "Banning" a supplier / contractor or a bidder or an applicant for registration as a registered supplier. For this purpose, the abridged version of guidelines hoisted at website http://www.bhel.com/vender_registration/vender.php (Suspension of business dealings with suppliers / contractors) is being followed across all BHEL units. Bidders shall keep themselves aware of these guidelines before submission of their quote.

For BHEL Piping Centre,

Sandeep
SE / Purchase
+91-044-28161315
+91-9445159877

SL. No.	Material Code	Material Description	SPECIFICATION	FITTING TYPES	Applicable TDC	FITTING D1 VALUE	DRAWING_No	Qty (No)	Unit Weight (kgs)	Total Weight (Kgs)
1	925051800000	Y PIECE ID365X104/ID300X94 SA182F92	SA182F92	Y PIECE	TDG:104:10	FIG X-365/300	3-80-300-34689/00	6	2,000.00	12000
2	925051850000	Y PIECE OD1016X38/OD914X34 SA105	SA105	Y PIECE	TDG:104:10	P-943.3/850	3-80-320-34702-R00	3	1,750.00	5250
								9		17250

Enq SI No	Material Code	Description	Project	Fitting Type	Method of construction	Applicable drawing no	Applicable TDC	Applicable Quality Plan	Net qty (Nos)	Quoted / Regretted	Currency of quote	Unit Rate (FC / INR)
1	925051800000	Y PIECE ID365X104/ID300X94 SA182F92	Patratu Unit-1, 2 & 3 (Qty 2 No.s for each Unit)	Y-Piece	Seamless	3-80-300-34689/00	TDG 104 Rev 10	7381QPC 20	6.00			
2	925051850000	Y PIECE OD1016X38/OD914X34 SA105	Patratu Unit-1, 2 & 3 (Qty 1 No.s for each Unit)	Y-Piece	Seamless	3-80-320-34702-R00	TDG 104 Rev 10	QPG87 Rev01	3.00			

Note-

1. Evaluation and ordering will be done itemwise.
2. Unit rate to be quoted-
 - a. For foreign bidder- 'CFR' Chennai port (all incl. of P&F, inspection charges, freight etc)
 - b. For indigenous bidder- 'FOR' BHEL Trichy / Site basis (all incl. of P&F, F&I, inspection charges etc)
3. For foreign bidders, prevailing incidental charges for import purchase (presently @2.75%) and net customs duty (presently @5.5%) will be applicable on the rate quoted.
4. SBI TT Selling rate as on the date of Part I opening will be considered for foreign bidder.

Annexure A – General Terms & Conditions

1. PURCHASE PREFERENCE FOR MAKE IN INDIA

"For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local Supplier/ Nonlocal Supplier and purchase preference to Class I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before finalization of contract / PO / WO against this NIT". In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and / or local content in respect of this procurement, same shall be applicable.

'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the Item procured (excluding net domestic indirect taxes) minus the value of imported. Content in the item (including all customs duties) as a proportion of the total value, in percent.

'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%, as defined under this Order.

'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under this Order.

'Non-Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than or equal to 20%, as defined under this Order.

In case item is divisible, following procedure will be followed-

- Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L 1.
- If L1 bid is not a 'Class-I local supplier', 50% of the order quantity' shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to local supplier's quoted price falling within the margin purchase preference, and contract for that quantity shall be awarded to 'Class-I local supplier' subject to matching the L 1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some Quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L 1 bidder.

In case item is not divisible, following procedure will be followed-

- Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a 'Class-I local supplier', the contract will be awarded to L1.
- If L1 is not from a local supplier, the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to 'Class-I local supplier's' quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
- In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, then the contract may be awarded to the L1 bidder.
- Any item wherein the net quantity is less than 2 (i.e. if qty is 1 No.) will be considered as not divisible for the purpose of operating purchase preference.

"Class-II local supplier" will not get purchase Preference in any procurement.

Document certifying local content and penal action in case of wrong declaration by suppliers.

- The 'Class-I local supplier' / 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to provide self-certification on their letter head certified by the authorized signatory of the bidder that the item

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offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.

- In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
- False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.
- A supplier who has been debarred by any procuring entity for violation of this order shall not be eligible for preference for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, the debarment takes effect prospectively from the date of uploading on the website(s) of The Department of Expenditure, GOI in such a manner that ongoing procurements are not disrupted.
- The onus of submission of appropriately certified documents lies with the bidder and BHEL shall not have any liability to verify the contents and will not be responsible for the same. However, in case BHEL has any reason to doubt the authenticity of the Local Content, BHEL reserves the right to obtain the complete back up calculations before award of contract failing which the bid shall be rejected.

2. REVERSE AUCTION

“BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among all the techno-commercially qualified bidders.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.”

3. PURCHASE PREFERENCE FOR MSE SUPPLIERS.

- Purchase preference for local MSE's quoting in the tender will be 25%.
- Within the 25% reservation for local MSE's, 3% reservation will be applicable for women owned MSE's and 6.25% reservation will be applicable for MSE's owned by SC / ST.
- Payment for MSE Indigenous vendors will be as per MSMED Act, 2006

Document to be submitted as proof of MSE.

MSE suppliers can avail the intended benefits only if they submit **UDHYAM CERTIFICATE** along with the offer.

Non submission of documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for the Enquiry if any deficiency in the above required documents are not submitted before price bid opening.

However, credentials of all MSE suppliers will be verified before considering the intended benefits for MSE suppliers at the time of tender evaluation.

In case item is not divisible, following procedure will be followed-

- Among all qualified bids, the lowest bid will be termed as L1. If L1 is from a MSE supplier, the contract will be awarded to L1.
- If L1 is not from a MSE supplier, the lowest bidder among the MSE suppliers, will be invited to match the L1 price subject to MSE supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such MSE supplier subject to matching the L1 price.
- In case such lowest eligible MSE supplier fails to match the L1 price, the MSE supplier with the next higher bid within the margin of MSE preference shall be invited to match the L1 price and so on and contract shall be

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awarded accordingly. In case none of the MSE suppliers within the margin of purchase preference matches the L1 price, then the contract may be awarded to the L1 bidder.

- Any item wherein the net quantity is less than 2 (i.e. if qty is 1 No.) will be considered as not divisible for the purpose of operating purchase preference.

Note: - In case of L1 vendor is having any one of MSE OR Make in India preference, but vendor is falling in MSE/MII price range with both MSE and Make in India preference then quantity will be counteroffered to the vendor who is giving both the preferences.

4. BHEL STANDARD GUARANTEE CLAUSE

The materials are to be guaranteed for satisfactory performance for a period of 24 months from the date of dispatch or 18 months from the date of commissioning / putting into use whichever is earlier and if any defect is noticed during the above period, the same shall be rectified / replaced free of cost on FOR destination basis within a reasonable time, maximum limited to the agreed delivery period. To this effect a guarantee certificate should be sent along with the dispatch documents in the event of an order.

5. CANCELLATION / TERMINATION OF CONTRACT, DEFAULT / BREACH OF CONTRACT AND RISK PURCHASE

In case of abnormal delays (beyond the maximum late delivery period as per Penalty clause) in supplies / defective supplies or non-fulfilment of any other terms and conditions given in Purchase Order as enumerated subsequently in this clause, Purchaser shall be entitled to cancel the Order / Contract either in whole or portion thereof without compensation to Seller / Contractor and if the Purchaser so desires, may procure upon such terms and in such manner as deemed appropriate, stores not so delivered or others of similar description where stores exactly complying with particulars are not, in the opinion of the Purchaser, which shall be final, readily procurable, at the risk and cost of the Seller / Contractor and the Seller / Contractor shall be liable to the Purchaser for any excess costs provided that the Seller / Contractor shall continue the performance of the Order / Contract to the extent not cancelled under the provisions of this clause. The Seller / Contractor shall on no account be entitled to any gain on such repurchases. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer.

Risk & Cost Clause, in line with Conditions of Contract may be invoked in any of the following cases:

- a. Contractor / supplier's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to contractor/ supplier including unexecuted portion of work / supply does not appear to be executable within balance available period (#) considering its performance of execution.
- b. Withdrawal from or abandonment of the work by contractor before completion of the work as per contract.
- c. Non completion of work / Non-supply by the Contractor / supplier within scheduled completion / delivery period as per Contract or as extended from time to time, for the reasons attributable to the contractor / supplier.
- d. Termination of Contract on account of any other reason (s) attributable to Contractor / Supplier.
- e. Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- f. Non-compliance to any contractual condition or any other default attributable to Contractor / Supplier.

Risk and Cost amount against Balance Work

Risk & Cost Amount= $[(A-B) + (A \times H/100)]$

Where,

A= Value of Balance scope of Work / Supply (*) as per rates of new contract

B= Value of Balance scope of Work / Supply (*) as per rates of old contract being paid to the contractor / supplier at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H= Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

***(Balance scope of work / supply)**

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Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work / Supply for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute / extra items whose rates have already been approved would form part of contract quantities for this purpose. Substitute / extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

Note: In case portion of work is being withdrawn, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work / supply' for calculating Risk & Cost amount.

LD against delay in executed work / supply in case of Termination of Contract in case of Risk and Cost Option

LD against delay in executed work / supply shall be calculated in line with LD clause of the contract for the delay attributable to contractor / supplier. For limiting maximum LD value, contract value shall be taken as Executed Value of work / supply.

Method for calculation of "LD against delay in executed work / supply" is given below.

- a. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor / supplier= T1
- b. Let the value of executed work / supply till the time of termination of contract= X
- c. Let the Total Executable Value of work / supply for which inputs / fronts were made available to contractor / supplier and were planned for execution till termination of contract= Y
- d. Delay in executed work / supply attributable to contractor/supplier i.e. $T2 = (1 - X/Y) * T1$
- e. LD shall be calculated in line with LD clause of the Contract for the delay attributable to contractor / supplier taking "X" as Contract Value and "T2" as delay attributable to contractor / supplier.

Note: In case portion of work / supply is withdrawn, no LD shall be applicable for portion of work / supply withdrawn.

Recovery from Supplier

Recoveries from contractor / supplier on whom risk & cost has been invoked shall be made from the following:

- a. Dues available in the form of Bills payable to contractor / supplier, SD, BG's against the same contract.
- b. Dues payable to contractor / supplier against other contracts in the same Region / Unit / Division of BHEL.
- c. Dues payable to contractor / supplier against other contracts in the different Region / Unit / division of BHEL.
- d. Legal Options for recovery of dues payable by the supplier / contractor.

6. SUSPENSION OF BUSINESS DEALING

In order to protect the commercial interests of BHEL, it becomes necessary to take action against suppliers / contractors by way of suspension of business dealings, who either fail to perform or are in default without any reasonable cause, cause loss of business / money / reputation, indulge in malpractices, cheating, bribery, fraud or any other misconduct or formation of cartels so as to influence the bidding process or influence the price etc. Suspension of Business Dealings could be in the form of "Hold" or "Banning" a supplier / contractor or a bidder or an applicant for registration as a registered supplier. For this purpose, the abridged version of guidelines hoisted at website http://www.bhel.com/vender_registration/vender.php (Suspension of business dealings with suppliers / contractors) is

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being followed across all BHEL units. Vendors shall keep themselves aware of these guidelines before submission of their bid.

7. FRAUD PREVENTION POLICY

The Bidder along with their associates / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website at [www.bhel.com/pdf/BHEL Fraud Prevention Policy.pdf](http://www.bhel.com/pdf/BHEL_Fraud_Prevention_Policy.pdf) and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

8. FORWARDING OF TEST CERTIFICATES & INSPECTION REPORTS

Test certificates (TC) along with Inspection Reports (IR) as called for in the TDC (Three ink signed originals) / approved Quality Plan shall be sent to Manager / Purchase (Fittings), BHEL Piping Centre immediately after the shipment / dispatch of items. Forthcoming section may please be referred for detailed list of documents to be submitted to respective agencies in BHEL.

TC & IR shall be furnished for each batch of shipment / dispatch. If entire PO quantity is manufactured in one lot but dispatched in phased manner, original "IBR Form" should be submitted with the first consignment. For subsequent consignments, attested Xerox copy of IBR along with copies of TC and IR indicating invoice detail against which original TC and IR was handed over to BHEL shall be submitted. Soft copies of the all the test certificates shall also be submitted through email.

Year of code for the technical standards shall be latest and the specific year shall be indicated in the MTC's as well as applicable IBR Forms.

Additionally foreign vendors shall indicate the item description as "Boiler Components- Fittings" in all the dispatch documents like Bill of Lading, Invoice, Packing list, Country of origin certificate etc. Vendor shall negotiate the documents with bank only "For the net shipment value" (ie. invoice value excluding the LD value).

9. PAYMENT DOCUMENTS

In case of indigenous vendors

Payment shall be made against submission of the following documents-

- a. Original GST compliant invoice and 2 copies of the same.
- b. Original site acknowledged Lorry Receipt (Goods Receipt (GR) date for in case of BHEL Trichy stores).
- c. Original inspection report and all original documents as called for in TDC / approved QP.

If one original certificate / LR is applicable for more than one invoice quantity / invoice, Xerox copy is acceptable with original correlation details on the Xerox copy with attestation by suppliers Quality in charge.

GST compliance-

- a. Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration No (GSTIN) which should be clearly mentioned in the offer. If the dealer is exempted from GST registration, a declaration with due supporting documents need to be furnished for considering the offer. Dealers under composition scheme should declare that he is a composition dealer supported by the screen shot taken from GST portal. The dealer has to submit necessary documents if there is any change in status under GST.
- b. Supplier shall mention their GSTIN in all their invoices (incl. credit Notes, Debit Notes) and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No. which is linked/uploaded in GSTN network shall be clearly indicated), Billed to party (with GSTIN) & Shipped to party details, item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, Place of Supply etc.

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- c. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).
- d. Invoices will be processed only upon completion of statutory requirement and further subject to following:
 - o Vendor declaring such invoice in Form GST ANX-1
 - o Receipt of Goods or Services and Tax invoice by BHEL
- e. As the continuous uploading of tax invoices in GSTN portal (in GST ANX-1) is available for all (i.e. both Small & Large) tax payers under proposed new GST Return System, all invoices raised on BHEL may be uploaded immediately in GST portal on dispatch of material /rendering of services. The supplier shall ensure availability of Invoice in GST portal before submission of invoice to BHEL. Invoices will be admitted by BHEL only if the invoices are available in GSTN portal (in BHEL's GST ANX-2).
- f. In case of discrepancy in the data uploaded by the supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note or debit note (details also to be uploaded in GSTN portal) for the shortages or rejections in the supplies or additional claims, within the calendar month informed by BHEL.
- g. In cases where invoice details have been uploaded by the vendor but failed to remit the GST amount to GST Department (Form PMT-08 or Form GST RET-01 to be submitted) within stipulated time, then GST paid on the invoices pertaining to the month for which GST return not filed by the vendor will be recovered from the vendor along with the applicable interest(currently 24% p.a) and all subsequent bills of the vendor will not be processed till filing of the GST return by the vendor
- h. In case GST credit is denied to BHEL due to non-receipt or delayed receipt of goods and/ or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount claimed in the invoice shall be disallowed to the vendor.
- i. Where any GST liability arising on BHEL under Reverse Charge (RCM), the vendor has to submit the invoices to BHEL well within the timeline prescribed in GST Law, to enable BHEL to discharge the GST liability. If there is a delay in submission of invoice by the vendor resulting in delayed payment of GST by BHEL along with Interest, then such Interest payable or paid shall be recovered from the vendor.
- j. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contracts. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Tax Invoice will be issued by BHEL indicating the respective supply invoice number.
- k. GST TDS will be deducted as per Section 51 of CGST Act 2017 and in line with Notification 50/2018 – Central Tax dated 13.09.2018. GST TDS certificate which will be generated in GST portal subsequent to vendor accepting the TDS deduction in the GST portal, will be issued to the vendor.

In case of foreign vendors

Payment shall be made against presentation of the following documents thru bank-

- a. Original Bill of Lading (BL).
- b. Original Invoice.
- c. Packing List.
- d. Country of origin certificate.

The following documents shall be forwarded to DGM / Purchase directly-

- a. Original inspection report.
- b. Original test certificates.

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- c. Guarantee certificate.

10.FORWARDING OF DISPATCH DOCUMENTS (APPLICABLE FOR FOREIGN VENDORS)

Dispatch documents and Test Certificates shall be forwarded as indicated below (details indicated are as applicable as on date and any revision to the same shall be communicated along with PO)-

1. BHEL Regional Operating Division (ROD)-

Copy of Invoice, Bill of Lading, Packing List, Country of origin certificate, Test Certificate (selected documents namely TPI covering letter, IBR Form IIIC and MTC only) to be mailed to the following persons in BHEL ROD for material clearance at Chennai Port-

- a. Mr Santosh Kumar Jena – santoshj@bhel.in
- b. Mr Velmurugan – vels@bhel.in
- c. Mrs Shanthivasantha Rani – mshanthi@bhel.in

Mail copy mail shall also be sent to the following persons in Piping Centre.

- a. Mr Indrajit Biswas – ibiswas@bhelin
- b. Mrs Priya Balaji – pb@bhel.in
- c. Mr V Sundaram – vsundaram@bhel.in
- d. Mrs M Ramya – mramya@bhel.in

Copy of above referred dispatch documents shall also be sent to Mr SS Rajan, BHEL ROD thru courier. The address of ROD division will be in BHEL Purchase Order. ROD's contact no 044 24374317 / 24374319.

All dispatch documents including BL shall be signed by competent authorities.

2. BHEL Piping Centre-

Copy of Invoice, Bill of Lading, Packing List, Country of origin certificate, Credit note for LD value (if LD is applicable) shall be mailed to the following persons at BHEL Piping Centre, Chennai-

- a. Mr Indrajit Biswas – ibiswas@bhelin
- b. Mrs Priya Balaji – pb@bhel.in
- c. Mr V Sundaram – vsundaram@bhel.in

Copies of Invoice, Bill of Lading, Packing List, Country of origin certificate, Credit note for LD value (if LD is applicable) along with one complete set of Original Test Certificates along with one copy shall be sent thru courier to Mr Indrajit Biswas, Manager / Purchase, Piping Centre, Chennai.

Scanned copies of complete set of Test Certificates (TPI covering letter, IBR Form IIIC, MTC and all Inspection reports as called for in BHEL TDC / approved QP) shall be mailed to-

- a. Mr Indrajit Biswas – ibiswas@bhelin
- b. Mrs Priya Balaji – pb@bhel.in
- c. Mr V Sundaram – vsundaram@bhel.in

3. Bank-

Three sets of original Invoice & Packing list, one set of original Bill of Lading and Country of origin certificate, Credit note for LD value (if LD is applicable) along with one complete set of Test Certificate shall be forwarded thru Bank. The documents shall be negotiated with Bank only for the 'Net shipment value'. Net Shipment Value = Invoice value – LD value.

Annexure A – General Terms & Conditions

11. BILL OF ENTRY FILING (APPLICABLE FOR FOREIGN VENDORS)

Indian Customs has imposed a penalty on late filing of Bill of Entries (Air / Sea Shipments) by the importer @ INR 5,000/- per day (for Initial 03 days) & INR 10,000/- per day (thereafter). The maximum free time allowed for filing Bill of Entry is 24 hrs from the time of arrival of cargo at final port of discharge. The amount indicated is as prevailing on date. The actual penalty amount as prevailing on the date clearance shall be levied on the vendor if applicable.

The vendor should furnish the Non-Negotiable Documents (Air Way Bill / Bill of Lading, Error free Commercial Invoice, Packing List, Certificate of Origin) by mail and by post / courier to BHEL well in advance (ie. minimum 5 days prior to landing in case of sea and 2 days prior to landing in case of Air) at final port of discharge.

Vendor will be held responsible for the penalty arising against the late filing of Bill of entry due to-

- a. Non-availability of Non-Negotiable Documents (NND's) before the cargo arrival
- b. Discrepancy in documents
- c. Short landing of consignments (For shipments on CFR Chennai Port)

For all shipments for the contracts (PO's) finalized on CFR Chennai Port basis-

- a. 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.
- b. Detention / demurrage charges arising 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.
- c. Bill of Lading should clearly endorse the detention free period and the same should be honoured by the freight forwarder and liner. Detention / demurrage if any due to non-acceptance of detention free period indicated in bill of lading will be to vendors account only.

Apart from the normal charges like Terminal Handling Charges, Container cleaning Charges, Delivery Order Charges at final port of discharge, other charges* indicated in delivery order will not be borne by BHEL. The liner / freight forwarders should be properly communicated by the vendor 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 other charges (not payable by BHEL) as indicated above 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
- g. ISPS - International Ship and Port Facility Security charges
- h. OHS - Origin handling Charges
- i. Port Congestion Charges
- j. Interim surcharge
- k. Chennai Trade charge

**Enq- 4102100019 dt 13.09.2021 - Seamless Forged Y Piece - SA105/F92
Techno-Commercial Terms**

Sl No	BHEL requirement
1	Quotation no
2	Quotation date
3	Currency of quote (Foreign bidders shall quote only in foreign currency)
4	Applicable GST % shall be indicated (Foreign bidders shall indicate "Not applicable")
5	<p>Technical requirements-</p> <p>1) TDG 104 Rev 10 is applicable.</p> <p>2) Quality Plan 7381QPC 20 is applicable for F92 Y-Piece (Enq. SL. No.1) and QPG 87 Rev01 for SA105 Y-Piece (Enq. Sl. No. 2)</p> <p>3) Raw material shall be sourced from approved suppliers as per QCP - 18 Rev 03 dt 19 07 2019 (or latest revision).</p> <p>4) Packing procedure shall be as per PC-PKG-01.</p> <p>5) EP shall be as per DRG 3-80-300-19825/04 if not indicated explicitly in the drawing.</p>
6	Vendor acceptance to S3- Flattening test & S4- etching test for F92 material
7	<p>Technical deviations (if any):-</p> <p>Bidders may note that except for the deviations listed in the 'Enquiry Deviation Format', the bid shall be deemed to comply with all the requirement in the bidding documents and the bidders shall be required to comply with all terms, conditions and specifications of the bidding documents irrespective of any mention to the contrary, anywhere else in the bid. Deviations taken by vendors (if any) are subject to BHEL approval. If deviation format is not submitted by bidder, it will be construed that the bidder complies to all the technical requirements of BHEL without any deviation.</p>
8	<p>Bid validity-</p> <p>4 months from the date of Part I bid opening (Mandatory to accept else bid is liable for rejection)</p>
9	<p>Delivery period-</p> <p>6 months from LOI / PO date for items of Projects Patratu-1 & 2.</p> <p>9 months from LOI / PO date for items of Projects Patratu-3.</p>
10	<p>Delivery term-</p> <p>1. Foreign bidder - 'CFR' Chennai port (all inc of P&F, inspection charges, freight etc). All Inspection documents for review a witness as per approved QP shall be followed and charges shall be incl.</p> <p>2. Indigenous bidder - 'FOR' BHEL Trichy / Site (all inc of P&F, F&I, testing, inspection charges etc).</p>
11	<p>Container detention period-</p> <p>For foreign bidders, 21 days free container detention period for cargo clearance shall be provided.</p>
12	<p>Liquidated Damage clause-</p> <p>0.5% of the price for each week of delay upto a maximum of 10% of the price of delayed / undelivered portion. For the purpose of LD calculation, BL date / LR date will be considered respectively for import and indigenous bidders.</p> <p>In case of deviation to BHEL's standard LD terms, loading will be applicable and will be limited to the extent to which it is not agreed to by the bidder.</p>
13	<p>Evaluation & Ordering-</p> <p>1. Evaluation will be done on par for both indigenous and foreign bidders. For foreign bidders, inland freight from Chennai to BHEL Trichy, miscellaneous charges as applicable and net customs duty shall be loaded on the quoted rates. For the purpose of evaluation, Exchange Rate (SBI TT Selling rate) as on the date of Part I bid opening will be considered.</p> <p>2. Item wise ordering will be resorted to.</p> <p>3. Minimum Order Quantity (MOQ) / Minimum Order Value (MOV) condition will not be accepted. Bids of such bidders (if any) insisting for MOQ / MOV will be rejected.</p>
14	<p>Payment term-</p> <p>1. Indigenous supplier- 100% payment after 60 days after receipt and acceptance of materials (site acknowledgement to be submitted in case of Direct to Site supplies).</p> <p>2. Import supplier- 100% thru CAD after 60 days from the date of receipt of documents specified in PO at BHEL bank.</p> <p>3. In case of any new import supplier who is not approved with BHEL Piping Centre for any of the Material Categories of Fittings / Forgings, payment term will be on CAD basis after 60 days from the date of receipt & acceptance of material.</p>
15	<p>Reverse Auction-</p> <p>Opening of Part II bid may be thru Reverse Auction. Bidder shall confirm acceptance for participation in Reverse Auction (refer Annexure A for details).</p>
16	<p>Cancellation / termination of contract, default / breach of contract and risk purchase-</p> <p>As per BHEL's Standard Cost and Risk clause indicated in Annexure A enclosed. By submitting the bid, vendor explicitly accepts to BHEL's requirement.</p>
17	<p>Risk deviating from BHEL's standard condition will be rejected</p> <p>NTPC approval-</p> <p>PQR qualified and Techno-Commercially acceptable bidders will be taken up for NTPC approval (Whoever not approved by NTPC for tendered items). Such bidders will be required to submit NTPC sub-supplier questionnaire (enclosed for reference upon intimation from BHEL. Price bids of only such PQR qualified, Techno-Commercially acceptable and NTPC approved bidders will be considered for price bid opening.</p>

18	<p>Purchase Preferences for the Enquiry- If Make in India preference is applicable as per Annexure A to NIT, declaration format as per NIT shall be submitted. In the event of non-submission of declaration, purchase preference will not be extended to bidders.</p>
19	<p>Purchase Preferences for the Enquiry- If MSE preference is applicable as per Annexure A to NIT, supporting documents as per NIT shall be submitted. In the event of non-submission of supporting documents, purchase preference will not be extended to bidders.</p>
20	<p>Any bidder from a country, which shares land border with India, will be eligible to bid only if the bidder is registered with competent authority (DPIIT) as per Annexure I of the circular for restrictions under rule 144(xi) of GFRs, 2017 and submit</p>
21	<p>Any other terms and conditions other than those indicated above shall be as per Annexure A- General terms and conditions</p>
22	<p>General note- Any disparity to terms indicated above, Annexure A and bidders offer, only the agreed terms and conditions above / Annex shall stand valid. Bidders terms and conditions which are in conflict will be ignored and will not be taken into consideration</p>

Declaration to be issued on Company letter head

In line with Government Public Procurement Order (Preference to Make in India) Order (PPP-MII Order), 2017 vide No. P-45021/2/2017-PP (BE-II) dated 04.06.2020, issued by DPIIT, Ministry of Commerce and Industry, we hereby certify that we, (Supplier name) are

- a) 'Class-I local supplier' meeting requirement of local content equal to or more than 50%,
- b) 'Class-II local supplier' meeting requirement of local content more than 20% but less than 50%,
- c) "Non-Local Supplier" meeting requirement of local content less than or equal to 20%.

(Strike off whichever is not applicable)

As defined under above referred Order for the following Enquiry Item SI Nos of BHEL Enquiry No 4102100019 dt 13.09.2021.

- Enquiry Item No./ (s) -

Details of location at which local value addition will be made is as follows:

.....
.....

By issuing this declaration, we understand and are in acceptance to the following-

- False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.
- In case of debarment by any procuring entity for violation of the provisions of the Public Procurement (Preference to Make in India), Order 2017 we shall not be eligible for preference for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, the debarment takes effect prospectively from the date of uploading on the website(s) of The Department of Expenditure, GOI in such a manner that ongoing procurements are not disrupted.
- We undertake the onus of responsibility of submission of appropriately certified documents. We understand that BHEL is not at liability to verify the contents and will not be responsible for the declaration made by us. However, in case BHEL has any reason to doubt the authenticity of the local content, BHEL reserves the right to obtain the complete back up calculations before award of contract and we are liable to submit the same if requested by BHEL. We also understand that our bid is liable for rejection in case we fail to submit the details as requested by BHEL.

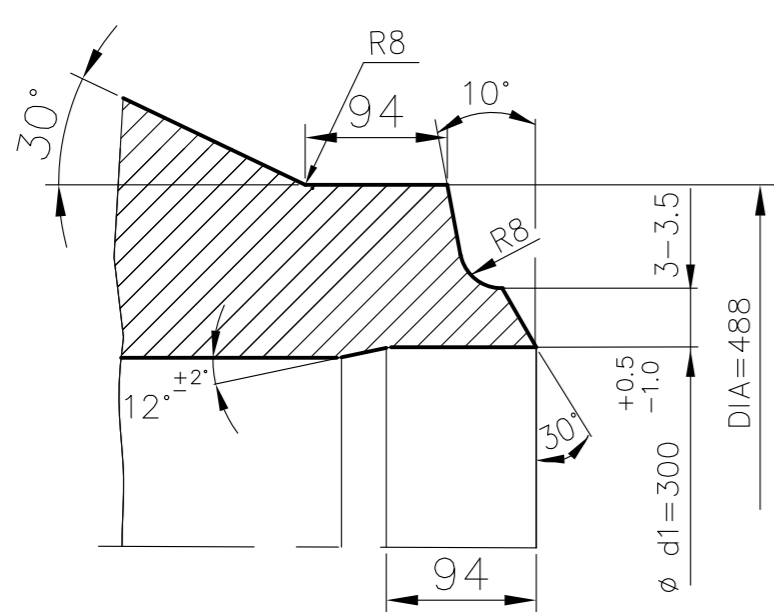
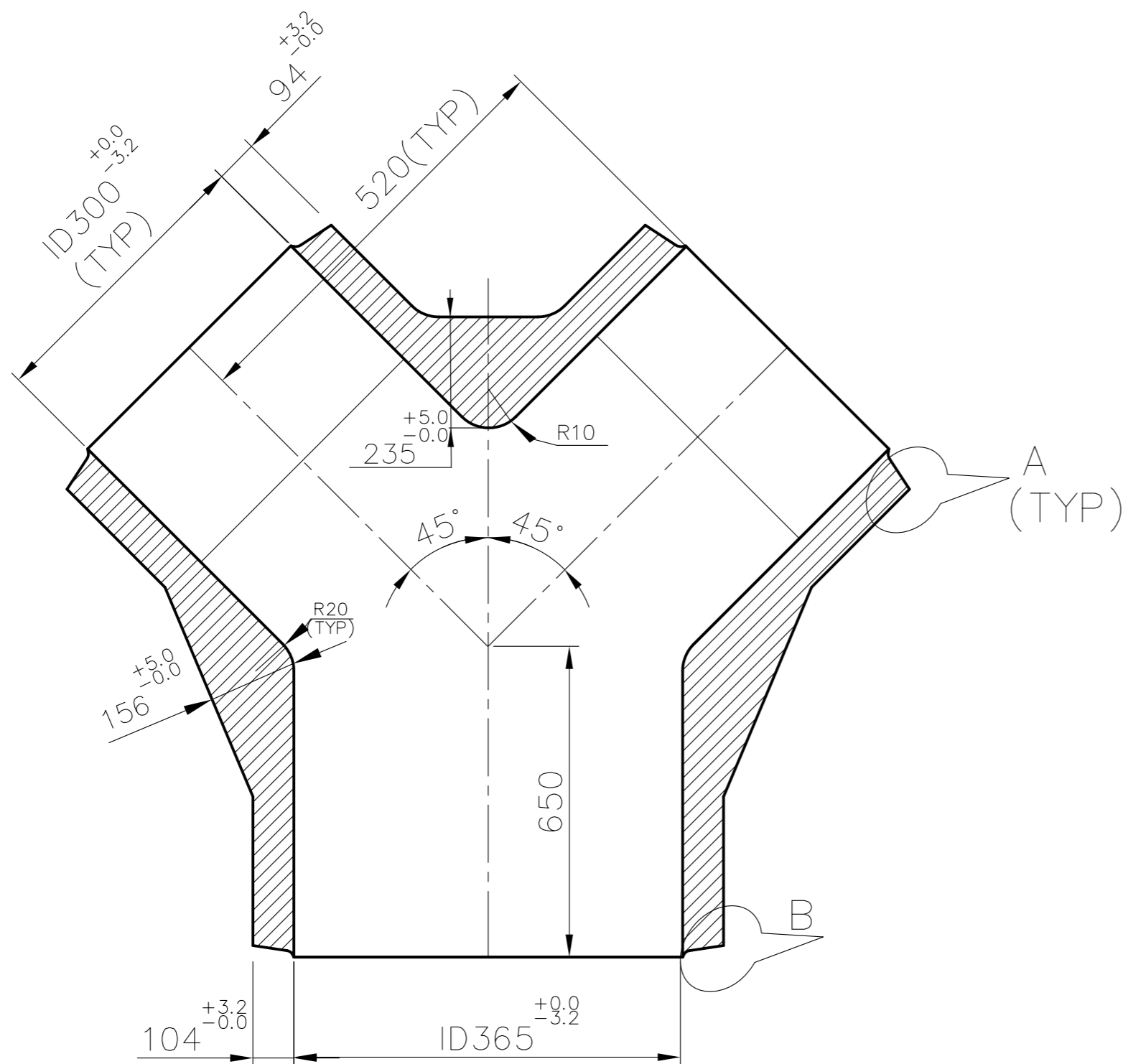
Seal and Signature of authorized signatory

Special Note-

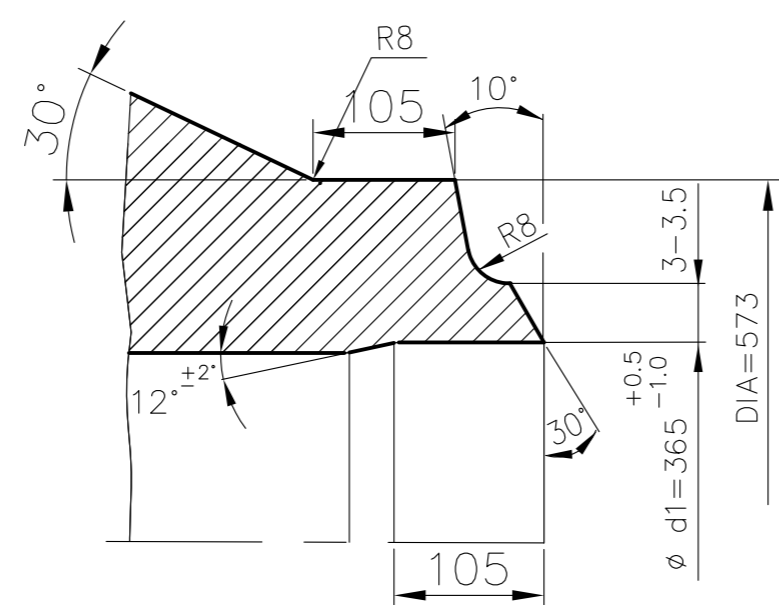
In cases of procurement for a value in excess of Rs. 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.

3-80-300-34689

DRAWING No



DETAIL-A



DETAIL-B

NOTES :-

1. DESIGN PRESSURE: 298 Kg/cm (g)
2. DESIGN TEMPERATURE : 608 °C
3. FOLLOW TDC: AS APPLICABLE
4. MANUFACTURING, INSPECTION AND TESTING SHALL BE AS PER IBR & EN-13480-3
5. CONSTRUCTION SHALL BE SEAMLESS / FORGED
6. MATERIAL SPECIFICATION SHALL BE SA182F92
7. CONNECTING PIPE SIZES ID365X104/ID300X94/ID300X94
8. VENDOR DRAWINGS WITH DIMENSIONS AND ACTUAL WEIGHT SHALL BE SUBMITTED FOR APPROVAL BEFORE MANUFACTURING.
9. WEIGHT MENTIONED IN THE BOM IS INDICATIVE ONLY

CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

01	Y -PIECE ID365X104/ID300X94	3-80-300-34689	92 505 180 0000	A	2000,000
ITEM NO.	DESCRIPTION	DRAWING NO.	MATERIAL CODE	UNIT WT.	QTY.
			SA 182 F92	A	1
			MATERIAL SPEC.	C	

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	DRN	NAME RP SINGH	SIGN	DATE 19.10.18	NO OF ITEMS
	CHD	KONDAPA NAIDU		19.10.18	
	APPD	R.SESHAGIRI		19.10.18	

REV 02	DATE	ALTD : APPD :	REV 01	DATE	ALTD : APPD :
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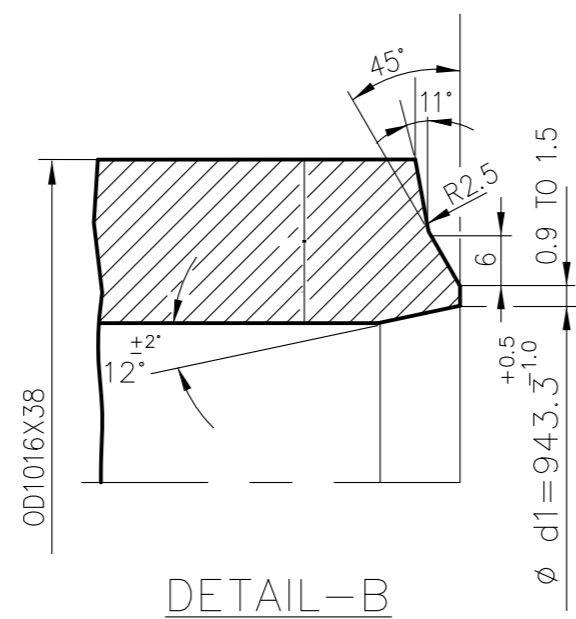
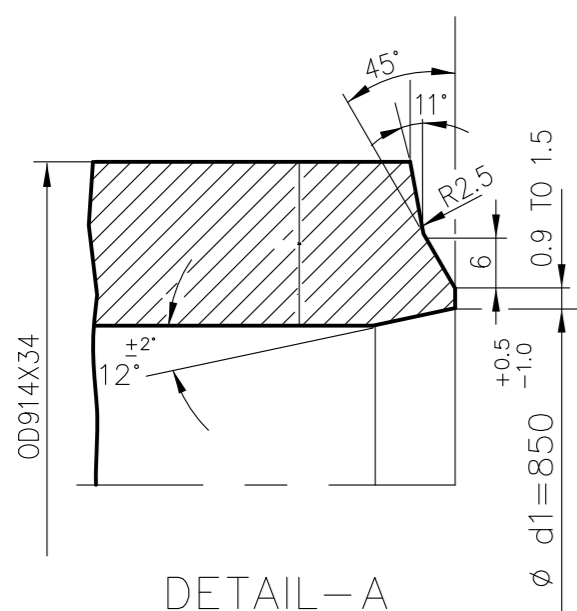
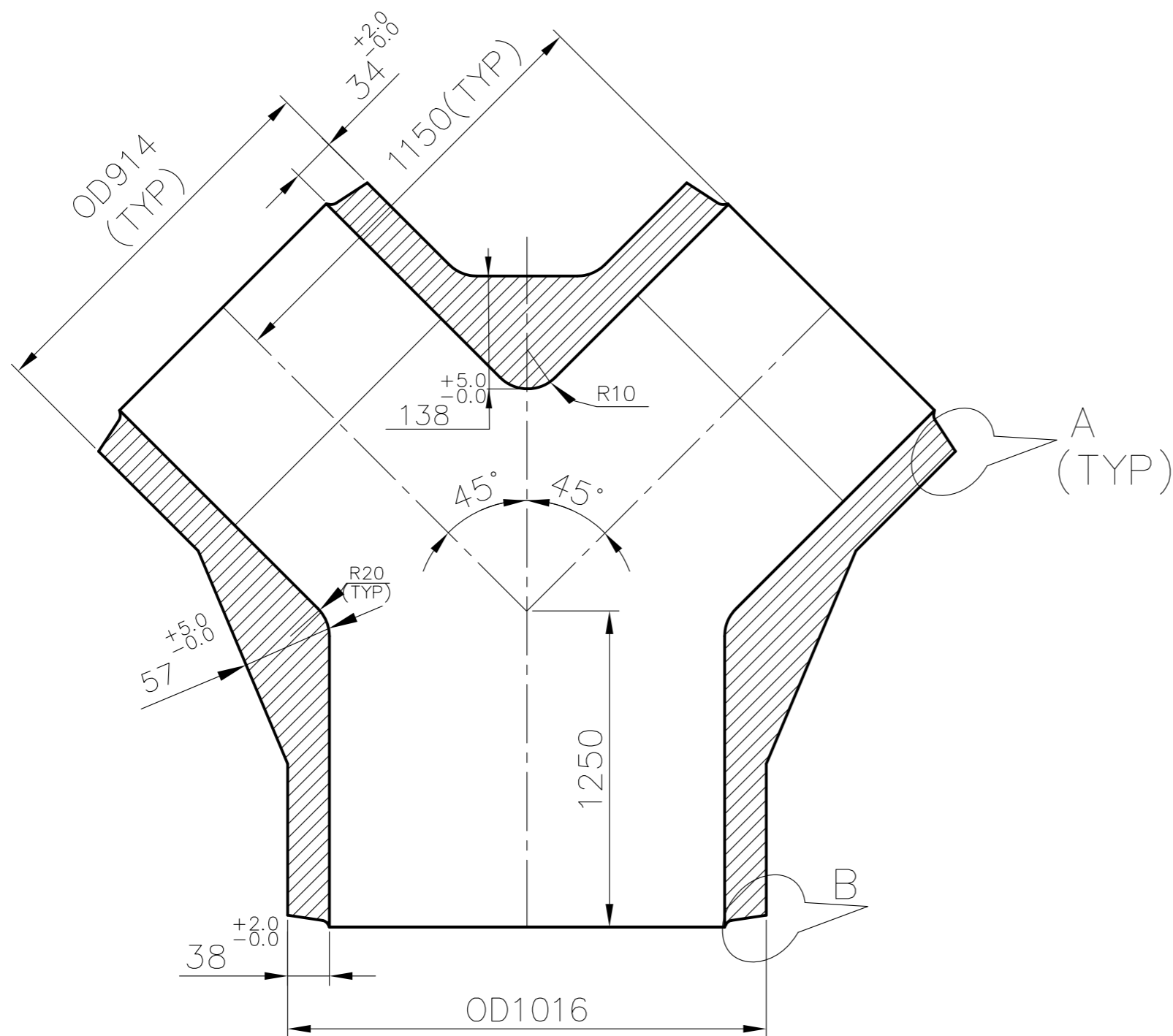
DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
CODE	C/M/F	N.T.S.	~2000		
TITLE			CARD CODE	DRAWING No.	REV
(ID365X104/ID300X94-SA182F92)			U 01	3-80-300-34689	00

3-80-320-34702

DRAWING No



CAUTION THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



NOTES

- DESIGN PRESSURE: 75 Kg/cm (g)
- DESIGN TEMPERATURE : 380 °C
- FOLLOW TDC: AS APPLICABLE
- MANUFACTURING, INSPECTION AND TESTING SHALL BE AS PER IBR & EN-13480-3
- CONSTRUCTION SHALL BE SEAMLESS / FORGED
- MATERIAL SPECIFICATION SHALL BE SA105
- CONNECTING PIPE SIZES OD1016X38/OD914X34
- VENDOR DRAWINGS WITH DIMENSIONS AND ACTUAL WEIGHT SHALL BE SUBMITTED FOR APPROVAL BEFORE MANUFACTURING.
- WEIGHT MENTIONED IN THE DRAWING IS INDICATIVE ONLY

01	Y -PIECE OD1016X38/OD914X34	3-80-320-34702	92 505 185 0000 SA 105	A	1750,000 1
ITEM NO.	DESCRIPTION	DRAWING NO.	MATERIAL CODE	A	UNIT WT.
			MATERIAL SPEC.	C	QTY.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017	DRN	NAME RP SINGH	SIGN	DATE 22.02.19	NO OF ITEMS
	CHD	KONDAPA NAIDU		22.02.19	
	APPD	R.SESHAGIRI		22.02.19	

REV 02	DATE	ALTD :	REV 01	DATE	ALTD :
		APPD :			APPD :

DEPT.	GRADE OF UN TOL. DIM	SCALE	WEIGHT (Kg).	BHEL PO REF.NO:	ITEM No.
CODE	C/M/F	N.T.S.	~1750		
TITLE			CARD CODE	DRAWING No.	REV
Y-PIECE OD1016X38/OD914X34			U 01	3-80-320-34702	00



**PURCHASE / MM / BOI
ENQUIRY DEVIATION**

429-024

PAGE

**SCHEDULE OF DEVIATION TO
BOI ENQUIRY NO:**

4102100019

DATE

13.09.2021

DESCRIPTION

Forged Y-Piece and Tees - SA105 & F92

SPECIFICATION

TDG 104 Rev 10 7381 QPC20

Drawing No

As enclosed with tender

QUALITY PLAN

7381 QCP 20

PACKING PROCEDURE

PC-PKG-01 Rev 00

DOCUMENT REFERENCE

BHEL CALLED FOR

FIRM'S ALTERNATIVE OFFER

CERTIFIED THAT OTHER THAN THE ABOVE DEVIATIONS, WE ARE ACCEPTING ALL THE OTHER SPECIFICATIONS AND REQUIREMENTS IN FULL TO YOUR ENQUIRY.

STATION:

DATE:

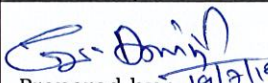
SIGNATURE OF FIRM'S REPRESENTATIVE

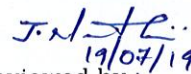
FIRM SEAL


- NOTE 1. Deviations should be taken only in the extreme case.
2. If necessary, use additional sheets with page control number.

**Bharat Heavy Electricals Limited, Piping Centre, Chennai.**List of raw material sources for SA182 F91
(Indigenous & Foreign)QCP:18
Rev: 03
Date:19.07.2019
Page 1 of 2

S. No	Vendor Name	Material	Location
AA)	Indigenous Sources		
1	Saarloha Advance Materials Private Limited, Pune, Maharastra	F91 & F92	INDIA
2	RMG Alloy Steel Limited, Baruch, Gujarat	F91	INDIA
3	Star Wire, Faridabad	F91	INDIA
4	UP Steels, Muzafarnagar	F91	INDIA
5	Alloy Steel Plant, Durgapur	F91	INDIA
6	Mishra Datu Nigam Limited, Midhani, Hyderabad	F91	INDIA
BB)	Foreign Sources		
7	A.C.P. S.r.l	F91 & F92	ITALY
8	Abs Spa	F91 & F92	ITALY
9	Acciaieria Bertoli Safau S.p.A	F91 & F92	ITALY
10	Acciaieria Fonderia Cividale S.p.A	F91 & F92	ITALY
11	Acciaieria Valbruna S.p.A	F91 & F92	ITALY
12	Afar spa	F91 & F92	ITALY
13	Ascometal (Asco Industries)	F91 & F92	ITALY
14	Aso Siderurgica S.r.l	F91 & F92	ITALY
15	Aubert & Duval	F91 & F92	ITALY
16	Baosteel Special Metals Co Ltd, Shanghai	F91 & F92	CHINA
17	Bohler Uddeholm	F91 & F92	ITALY
18	Breitenfeld Edelstahl AG	F91 & F92	AUSTRIA
19	Celsa Huta Ostrowiec SP. Z O. O.	F91 & F92	ITALY
20	Cogne Acciai Special S.p.A,	F91 & F92	ITALY
21	Coprosider ISF spa	F91 & F92	ITALY
22	Deutsche Edelstahlwerke GMBH	F91 & F92	GERMANY
23	Esia Fucine	F91 & F92	ITALY
24	Foc Ciscato	F91 & F92	ITALY
25	Forge Fedriga	F91 & F92	ITALY
26	Forge Monchieri spa	F91 & F92	ITALY
27	Forge Nicromo SRL	F91 & F92	ITALY
28	Forgiatura Marcora	F91 & F92	ITALY
29	Forgiatura Moderna Arese	F91 & F92	ITALY
30	Forgiatura Morandini	F91 & F92	ITALY
31	Forgiatura Vienna	F91 & F92	ITALY
32	Friulforgia Srl	F91 & F92	ITALY
33	Gloria Material Technology Corp	F91 & F92	TAIWAN
34	Gruppo Cividale	F91 & F92	ITALY
35	Industeel	F91 & F92	FRANCE
36	Inosmann	F91 & F92	ITALY
37	Inox Fucine	F91 & F92	ITALY
38	Italfond S.p.A	F91 & F92	ITALY
39	La Forgia Di Bollate	F91 & F92	ITALY


Prepared by: 19/7/19
Karthikeyan V, Dy.Engr/QA


Reviewed by: 19/07/19
Nanthini J, Dy. Mgr/QA


Approved by: 19/7/19
Panneer Selvam G, AGM/MM & Q

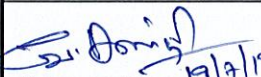
**Bharat Heavy Electricals Limited, Piping Centre, Chennai.**List of raw material sources for SA182 F91
(Indigenous & Foreign)QCP:18
Rev: 03
Date:19.07.2019
Page 2 of 2

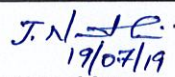
S. No	Vendor Name	Material	Location
40	Lucchini RS S.p.A, Foroni S.p.A	F91 & F92	ITALY
41	Metalcam spa	F91 & F92	ITALY
42	MT Acciai S.r.L	F91 & F92	ITALY
43	NLMK Verona S.p.A	F91 & F92	ITALY
44	Olifer ACP spa	F91 & F92	ITALY
45	Olifer, Cogne	F91 & F92	ITALY
46	Pilsen Steel	F91 & F92	ITALY
47	Rubiera Special Steel S.p.A	F91 & F92	ITALY
48	Sider Plating Scaigera	F91 & F92	ITALY
49	Società ED Indirizzo	F91 & F92	ITALY
50	Special Flanges SRL	F91 & F92	ITALY
51	Stahlwerk Bous GmbH	F91 & F92	GERMANY
52	Valforge SRL	F91 & F92	ITALY
53	Veronal steel	F91 & F92	ITALY
54	Vitkovice Heavy Machinery	F91 & F92	ITALY
55	Xincheng Special Steel Co Ltd, Jiangsu	F91 & F92	CHINA

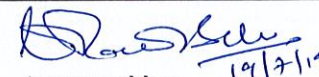
Record of Revision

Rev 00:	Fresh Issue	01.12.2013
Rev 01:	Heading Modified, Sources added based on MOM between BHEL, Trichy & NTPC - May 2014, NTPC approval letter for Chinese pipe makers.	21.09.2017
Rev 02:	Heading Modified, Sources added based on Enq.4101700030 dt:24.07.2017 vendor responses for F92 raw material sources.	25.04.2018
Rev 03:	Indigenous raw material source - S.no: 1 & 2 Vendor name changed based on name change request from vendor through Purchase dept	17.07.2019

Note: The raw material TC's shall be procured to meet IBR requirements and shall be in English only.


Prepared by : 19/7/19
Karthikeyan V, Dy.Engr/QA


Reviewed by : 19/07/19
Nanthini J, Dy. Mgr/QA


Approved by: 19/7/19
Panneer Selvam G, AGM/MM & Q



ENDORSEMENT SHEET FOR DRAWING / DOCUMENT

TO BE FILLED IN BY SUPPLIER AT TIME OF SUBMISSION

Project Name	PATRATU STPP PHASE-I - (3X 800 MW)
Contract No:	CS-9585-001-2 BHEL WORK ORDER NOS:- 7381, 7382, 7383, 7384, 7385 (MAIN BOILER) & 7386(AUX.BOILER)
Package name	EPC PACKAGE
Main Supplier	BHEL, Piping Centre, Chennai
Manufacturer Name	NTPC Approved Sub-Contractor and Sub-Vendors
Project/package Specific document	BHEL QP ref. : 7381:QPC:20:Rev 00.Date: 25.06.2018
	NTPC ref. : 9585-001-102-QVM-Q-240
Drawing title	Quality Plan for SEAMLESS BW FITTINGS - Gr-91/92 MATERIAL.
Reference Project Name	TELANGANA STPP PHASE-I (2X 800 MW)
Reference Contract No:	CS-9591-101-2
Reference Package name	SG PACKAGE
Reference Main Supplier	BHEL, Piping Centre, Chennai
Reference Manufacturer Name	NTPC Approved Sub-Contractor and Sub-Vendors
Reference Project/package document	BHEL QP ref.: 7313:QPC:19:Rev 02. Date: 21.05.2018
	NTPC Doc No.: 9591-102-102-QVM-Q-001A Rev 02. Date: 04.06.2018
Reference Drawing title	Quality plan for SEAMLESS BW FITTINGS - Gr-91/92 MATERIAL.

- i) Certified that the item /component is identical to that considered for reference document approval.
- ii) That there are minor changes in the item / component with respect to that considered for reference document approval and the same affect the reference document slightly as indicated below.


SIGN: (Main Supplier)

DATE: 25-06-2018


NTPC (Approved by/Date/Seal)

BHEL-UNIT: BHEL, Piping Centre, Chennai



CONTRACTOR'S NAME & ADDRESS
BHEL PIPING CENTRE, CHENNAI

SUPPLIED BY NTPC APPROVED SUB-VENDORS

MANUFACTURING QUALITY PLAN

ITEM :SEAMLESS BW FITTINGS CONFORMING TO ASME SA234 WP91, ASTM A234WP92 & ASME SA182 F91/F92 (BOUGHT OUT ITEM)
System : Power Cycle Piping

BHEL Customer No's : 7313, 7314, 7325 (MAIN BOILER) & 7315(AUX.BOILER)

QP No: 7313:QPC:19
Rev: 02
Dt:21.05.2018

PROJECT : TELANGANA STPP PHASE-I (2X 800 MW)
PACKAGE : SG Package
CONTRACT No.: CS-9591-101-2
MAIN-SUPPLIER : BHEL, Piping centre

S.No	COMPONENT & OPERATIONS	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT #	ACCEPTANCE NORMS	FORMAT OF RECORDS	D*	AGENCY			REMARKS
					M	C/N					M	C	N	
1	2	3	4	5	6a	6b	7	8	9	D*	**	10	11	

1.0 Raw Materials & Fittings shall be procured from NTPC approved Sources. The Test Certificate received from RM manufacturer shall meet IBR requirements.

1.1	Seamless Pipe/Forging	a) Chemical Composition, Mechanical Properties	Major	Verification of MTC	100%	100%	ASME SA335P91/P92 ASME SA182F91/F92 For Grade 92 : Ni-03%Max and Cu-025%Max	MTC	X	P	V	V	MTC - Mill Test Certificate Refer Note 01
		b) UT Condition	Major	Verification of MTC	100%	100%	## For P92 : UT as per EN10246:7 1996 or equivalent, with longitudinal notch of 5% epth of thickness (min 0.3mm and max. 1.5mm); For F92 : UT as per SA388 with Cl.3.3.4 of ASME Sec-VIII, Div.2 for Forging/Bars of dia or Thk >50mm		X	P	V	V	## : Hydro/UT for other material grades
		c) Hardness test	Major	Verification of MTC	100%	100%	ASME SA335P91/P92 ASME SA182F91/F92		X	P	V	V	
		d) Dimensions Outer Dia.,Thk.etc	Major	Measurement	100%	100%	ASME SA335P91/P92 ASME SA182F91/F92	HC	X	P	V	V	
		e) Material confirmation Test (Chemical)	Major	Spectro / X-ray fluorescence	100%	100%	ASME SA335P91/P92 ASME SA182F91/F92	PMI Report	X	P	W**	V	W** : Witness by IBR

2.0 IN PROCESS INSPECTION

2.1	Material receiving inspection	Marking & transfer of identification	Major	Visual	100%	--		HC	X	P	V	V	HC : History card Refer Note 02
2.2	Design Proof Test (only for Formed Fittings)	Qualification of Fittings	Major	Burst Test	100%	100%	As per ASME B16.9 / applicable design code	Internal report	X	P	V/W*	V	W*: Witness required if report is not available
2.3	Fitting Forming Procedure	Procedure qualification	Major	Review	100%	100%	ASME SA234WP91/ASTM A234WP92 ASME SA182F91/F92	\$Appd.Procedure	X	P	V	V	\$ Vendor's procedure to be approved by BHEL

 VIVEKANANDA YELLU Dy.Mgr /QA	 P RAVI SHANKAR AGM/Q	LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (X) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER, C: THIRD PARTY INSPECTING AGENCY APPROVED BY IBR&BHEL, N: NTPC; P: PERFORM, W: WITNESS, V: VERIFICATION & R: REVIEW AS APPROPRIATE CHP: NTPC SHALL IDENTIFY IN COLOUM 'N' AS 'W' #: NTPC INSPECTION ENGINEER TO CHECK, APPROVAL DATE/REVISION NO. OF REF.DOCUMENTS AT THE TIME OF INSPECTION		DOC. NO. 9591-102-102-QVM-Q-001A REV..... CAT...		
		SIGNATURE		PAGE 01 OF 04	FOR NTPC USE:	REVIEWED BY



CONTRACTOR'S NAME & ADDRESS
BHEL PIPING CENTRE, CHENNAI

SUPPLIED BY NTPC APPROVED SUB-VENDORS

MANUFACTURING QUALITY PLAN

ITEM :SEAMLESS BW FITTINGS CONFORMING TO ASME SA234 WP91, ASTM A234WP92 & ASME SA182 F91/F92 (BOUGHT OUT ITEM)
System : Power Cycle Piping

BHEL Customer No's : 7313, 7314, 7325 (MAIN BOILER) & 7315(AUX.BOILER)

QP No: 7313:QPC:19
 Rev: 02
 Dt:21.05.2018

PROJECT : TELANGANA STPP PHASE-I (2X 800 MW)
PACKAGE : SG Package
CONTRACT No.: CS-9591-101-2
MAIN-SUPPLIER : BHEL, Piping centre

S.No	COMPONENT & OPERATIONS	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT #	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS	
					M	C/N				M	C	N		
1	2	3	4	5	6a	6b	7	8	9	D*	**	10	11	
2.4	Forming of fittings	Process parameters	Critical	Temperature, Measurement & Visual	100%	--	Appd.Procedure		Internal report	X	P	V	V	
2.5	Post forming/forging Heat Treatment	Rate of Heating, Rate of Cooling & Soaking time	Critical	Temp & Time graph	100%	100%	Refer Note 03		HT Chart	X	P	R	R	Refer Note 03
2.6	Test Piece Marking	Selection of Test coupons	Major	Measurement & Marking	One Sample / Heat / Size/ HT Batch	--	As per ASTM A370		Internal report	X	P	W	V	Refer Note 02 & Refer Note 07
3.0 TESTS														
3.1	Chemical properties	Product Analysis	Major	Chemical Composition	One Sample / Heat / Size	One Sample / Heat / Size	ASME SA234WP91/ASTM A234WP92 ASME SA182F91/F92		Test Report	X	P	W**	V	W** : Witness by IBR
3.2	Mechanical properties	YS, UTS, % Elongation (Mandatory)	Major	Tensile Strength,	One Sample / Heat / Size/ HT Batch	One Sample / Heat / Size/ HT Batch	ASME SA234WP91/ASTM A234WP92 ASME SA182F91/F92		Test Report	X	P	W**	V	Refer Note 04
3.3	Hardness test	Hardness	Major	Measurement	100%	10% / 10%	ASME SA234WP91/ASTM A234WP92 ASME SA182F91/F92		Test Report	X	P	W	W	
3.4	NDE	(a) Volumetric Defect	Major	UT#	100%	10% / 10%	ASME SA388	ASME SecVIII Div-2, CI3.3.4	Test Report	X	P	W	W	# : For dia>=200mm 100% witness by BHEL & 10% by NTPC
		(b) Sub-surface Defect	Critical	WET MPI	100%	10% / 10%	ASTM E709	ASME B31.1 CI. 136.4.3	Test Report	X	P	W	W	
3.5	Photomicrographic test	Microstructure	Critical	Insitu Micro	One Sample / Heat / Size/ HT Batch	One Sample / Heat / Size/ HT Batch	No micro fissures. Microstructure shall show tempered martensite. Grain growth if any has to be examined further. For P92 : Delta Ferrite - 3%Max.		Test Report & Photomicrograph (Magnification at 500x minimum)	X	P	W	V	Refer Note 08

(Signature)
VIVEKANANDA YELLU
 Dy.,Mgr /QA

(Signature)
P RAVI SHANKAR
 AGM/Q

MAIN-SUPPLIER

SIGNATURE

LEGEND:
 * RECORDS, INDENTIFIED WITH "TICK" (X) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN OA DOCUMENTATION.
 ** M: MANUFACTURER/SUB-SUPPLIER, C: THIRD PARTY INSPECTING AGENCY APPROVED BY IBR&BHEL, N: NTPC; P: PERFORM,
 W: WITNESS, V: VERIFICATION & R: REVIEW AS APPROPRIATE
 CHP: NTPC SHALL IDENTIFY IN COLOUM 'N' AS 'W' #: NTPC INSPECTION ENGINEER TO CHECK,APPROVAL DATE/REVISION NO. OF REF.DOCUMENTS AT THE TIME OF INSPECTION

NTPC

FOR NTPC USE:

DOC. NO. 9591-102-102-QVM-Q-001A REV..... CAT...

REVIEWED BY

APPROVED BY

APPROVAL SEAL



CONTRACTOR'S NAME & ADDRESS
BHEL PIPING CENTRE, CHENNAI

SUPPLIED BY NTPC APPROVED SUB-VENDORS

MANUFACTURING QUALITY PLAN

ITEM :SEAMLESS BW FITTINGS CONFORMING TO ASME SA234 WP91, ASTM A234WP92 & ASME SA182 F91/F92 (BOUGHT OUT ITEM)


System : Power Cycle Piping

BHEL Customer No's : 7313, 7314, 7325 (MAIN BOILER) & 7315(AUX.BOILER)

QP No: 7313:QPC:19
Rev: 02
Dt:21.05.2018

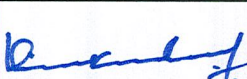


PROJECT : TELANGANA STPP PHASE-I (2X 800 MW)
PACKAGE : SG Package
CONTRACT No.: CS-9591-101-2
MAIN-SUPPLIER : BHEL, Piping centre

S.No	COMPONENT & OPERATIONS	CHARACTRISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT #	ACCEPTANCE NORMS	FORMAT OF RECORDS	D*	AGENCY			REMARKS					
					M	C/N					M	C	N						
1	2	3	4	5	6a	6b	7	8	9		** 10			11					
3.6	First Off Trail (FOT)	Ovality, Thicknning & other dimensions	Major	Measurement	100%	100%	Drawings & applicable standards		FOT Report	X	P	W	V						
4.0 FINAL INSPECTION																			
4.1	Dimensional Inspection	Surface check, Bend angle, Radius, End-to-end dimn, Ovality, Thickness, Wrinkles, d1 at ends, Edge preparation & other dimensions as per Drg.	Major	Measurement	100%	100%	ASME B16.9, BHEL Drg.. & P.O.		Report	X	P	W	W						
4.2	Positive Material Identification	Chemical check	Critical	Spectro / X-ray fluoroscence	100%	100%	ASME SA234WP91/ASTM A234WP92 ASME SA182F91/F92		Test Report	X	P	W	V	Chemical properties shall meet the requirements of SI.No.1.1(g) above					
4.3	Marking & Identification	Marking / Color coding	Major	Visual	100%	100%	Refer Note 12		Report	X	P	V	V	Refer Note 12					
4.4	Surface Protection & Painting	Appearance & DFT		Visual & Measurement	100%	100%	Project Specific NTPC approved Painting Scheme		Report	X	P	W	V	Refer Note 13					
4.5	Preservation & Packing	End Protection	Major	Visual	100%	100%	Refer Note 13		Report	X	P	V	V	Refer Note 14					
5.0 DOCUMENTATION																			
5.1	Inspection clearance	(a) IBR Certification	Major	All tests as per IBR	100%	100%	IBR		FORM-IIIC	X	P	V	--						
		(b) Documentation	Major	Verification	100%	100%	All reports as required in this QAP		Report	X	P	V	V						
5.2	Despatch Clearance	Despatch Clearance	Major	Verification	100%	100%			MDCC	X	P	V	CHP	Refer Note 11					
 VIVEKANANDA YELLU Dy.Mgr./QA MAIN-SUPPLIER										 P RAVI SHANKAR AGM/Q MAIN-SUPPLIER			LEGEND: * RECORDS, INDENTIFIED WITH "TICK" (X) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER, C: THIRD PARTY INSPECTING AGENCY APPROVED BY IBR&BHEL, N: NTPC; P: PERFORM, W: WITNESS. V: VERIFICATION & R: REVIEW AS APPROPRIATE CHP: NTPC SHALL IDENTIFY IN COLOUM 'N' AS 'W' #: NTPC INSPECTION ENGINEER TO CHECK,APPROVAL DATE/REVISION NO. OF REF.DOCUMENTS AT THE TIME OF INSPECTION		NTPC		DOC. NO. 9591-102-102-QVM-Q-001A REV..... CAT...		
SIGNATURE										PAGE 03 OF 04			FOR NTPC USE:		REVIEWED BY	APPROVED BY	APPROVAL SEAL		

		CONTRACTOR'S NAME & ADDRESS BHEL PIPING CENTRE, CHENNAI		MANUFACTURING QUALITY PLAN			PROJECT : TELANGANA STPP PHASE-I (2X 800 MW)							
		SUPPLIED BY NTPC APPROVED SUB-VENDORS		ITEM : SEAMLESS BW FITTINGS CONFORMING TO ASME SA234 WP91, ASTM A234WP92 & ASME SA182 F91/F92 (BOUGHT OUT ITEM) System : Power Cycle Piping			QP No: 7313:QPC:19 Rev: 02 Dt:21.05.2018							
				BHEL Customer No's : 7313, 7314, 7325 (MAIN BOILER) & 7315(AUX.BOILER)			PACKAGE : SG Package CONTRACT No. : CS-9591-101-2 MAIN-SUPPLIER : BHEL, Piping centre							
S.No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT #	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS
					M	C/N					M	C	N	
1	2	3	4	5	6a	6b	7	8	9	D*	** 10			11

NOTES:

- 1.0 The raw materials shall be as per drawing and NTPC Technical Specifications and to be procured from NTPC approved vendors.
- 2.0 Seal transfer on pieces to be cut shall be done by IBR inspector.
- 3.0 **POST FORMING / FORGING HEAT TREATMENT :-**
 Normalise at 1050 - 1080 deg.C & Temper at 750-780 deg.C
 Normalising and Tempering shall be carried out within 72 hours after completion of forming. The items shall be kept dry and stress free. The temperature shall be brought down to 0 to 100 deg.C after hot forming before normalizing and also after normalizing before tempering. Normalising and tempering of Gr91/Gr92 shall be done encompassing the entire component. Soaking shall be 1Hrs minimum.
- 4.0 Chemical & Mechanical tests shall be performed at in-house or reputed laboratories.
- 5.0 All NDE procedures shall be submitted to BHEL for review. NDE procedures shall have Level-III certified personnel approval incase of in-house. Incase of non-availability of inhouse facility NDE shall be performed by reputed laboratories.
- 6.0 Items shall be visually checked. No hard scales shall be present on inside & outside surfaces.
- 7.0 Gas cutting & Plasma cutting are prohibited for Gr91/Gr92 material. Repair by welding is prohibited.
- 8.0 Three replicas in one fitting. Actual magnification shall be indicated in the photomicrograph. Photomicrographs shall be provided as records for review & acceptance and future in-service reference. Delta Ferrite $\leq 3\%$, when measured as per VD TUV1272 for P92 fittings
- 9.0 All items shall be inspected and cleared by BHEL, IBR authorities & NTPC.
- 10.0 Necessary IBR Requirements shall be fulfilled and IBR documents to be submitted.
- ~~11.0 The Sub Vendor shall co-ordinate with NTPC and obtain MDCC before despatch of finished material and same shall be furnished to BHEL.~~
- 12.0 The finished components shall be punched with DU code (14 digit work order du details), Heat number, material specification, maker's emblem, Inspectors seal and Statutory authorities seal.
 In addition, the DU code, Heat no. and Material specification shall also be paint stencilled. **Colour Coding : Gr91 - Brown & Red; Gr92 - Brown & Blue**
- 13.0 Surveillance of Surface preparation, adhesion, Painting process & DFT by NTPC inspector.
- 14.0 Machined ends shall be well protected using end caps and suitably packed to avoid transit & other damages. Tack welding is prohibited.


				LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (X) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-SUPPLIER, C: THIRD PARTY INSPECTING AGENCY APPROVED BY IBR&BHEL, N: NTPC; P: PERFORM, W: WITNESS, V: VERIFICATION & R: REVIEW AS APPROPRIATE CHP: NTPC SHALL IDENTIFY IN COLOUM 'N' AS 'W' #: NTPC INSPECTION ENGINEER TO CHECK, APPROVAL DATE/REVISION NO. OF REF.DOCUMENTS AT THE TIME OF INSPECTION					DOC. NO. 9591-102-102-QVM-Q-001A REV..... CAT...		
VIVEKANANDA YELLU Dy.Mgr /QA	P RAVI SHANKAR AGM/Q										
MAIN-SUPPLIER	MAIN-SUPPLIER										
SIGNATURE	PAGE 04 OF 04							FOR NTPC USE:	REVIEWED BY	APPROVED BY	APPROVAL SEAL

STANDARD QUALITY ASSURANCE PLAN FOR FORGED FITTINGS
CONFORMING TO ASME SA105 & SA182

REF: BHEL TDC No. : TDG:104 (latest revision)

SL. NO.	COMPONENT OR OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	TYPE OF RECORD		AGENCY		REMARKS
									D*	M	B	
1	2	3	4	5	6	7	8	9	10	11	12	13
1.0	Raw material sources for F-91&92 shall be as per QCP:18(Latest Revision); Any other source proposed by the vendor shall be subjected to BHEL approval.. The Test Certificate for all material specifications received from RM manufacturer shall meet IBR requirements.											
1.1	Raw Materials	Chemical Composition, Mechanical Properties & NDT	Major	Verification of MTC & Ladle Analysis Report	100%	As per Required Material (ASME) Specification	MTC	X	P	V/R	F92 : Si: 0.10-0.50%; Ni: 0.30 max and Cu: 0.25 max. MTC - Mill Test Certificate	
1.2		Surface defect	Major	Visual	100%	As per Required Material (ASME) Specification	Report	X	P	V		
1.3		Dimensions Outer Dia.,Thk.etc	Major	Measurement	100%	As per Spec	Report	X	P	V		
1.4		Chemical Check for Semi-Finished Components	Major	PMI	100%	As per Required Material (ASME) Specification	Report	X	P	R/W*	W*For F91/92 material	
1.5		Hardness Test for Semi-Finished Components	Major	Measurement	100%	As per Specification	Report	X	P	R/W*		
		Forging ratio shall be 1:4 minimum & shall be reported in Mill test certificate incase of semi-finished forging otherwise manufacturer test certificate.										
2.0	IN PROCESS INSPECTION											
2.1	Fitting Forming Procedure	Procedure qualification	Major	Review	100%	Material Specn. & BHEL TDG:104	Appd. Procedure	X	P	V	Forming Procedure shall be approved by BHEL.	
2.2	LPT Procedure	Procedure Review	Major	Review	100%	Material Specn. & BHEL TDG:104 Only for SS & Duplex SS items	Appd. Procedure	X	P	V	LPT - Liquid Penetrant Test	
2.3	MPT Procedure	Procedure Review	Major	Review	100%	Material Specn. & BHEL TDG:104	Appd. Procedure	X	P	V	MPT - Magnetic Particle Test	
2.4	UT Procedure	Procedure Review	Major	Review	100%	Material Specn. & BHEL TDG:104	Appd. Procedure	X	P	V	UT - Ultrasonic Test	
2.5	Heat Treatment	Rate of Heating, Rate of Cooling & Soaking time	Critical	Temp & Time graph	100%	Material Specn. & BHEL TDG:104 Refer Note : 2	HT Chart	X	P	V/ W\$	W\$: For 1st off trial / at random	

LEGEND: M:- Manufacturer; B:- BHEL/ BHEL Nominated Agency; P - Perform; V - Verification; R-Review; W - Witness; H - Hold. D* - Documents required if marked "X"

PREPARED & REVIEWED BY: 
 Dy.Mgr/QA


 APPROVED BY: C VAITHIANATHAN
 AGM/QA



**BHARAT HEAVY
ELECTRICALS LIMITED**
PIPING CENTRE, MADRAS - 17
QUALITY ASSURANCE & CONTROL DEPT.

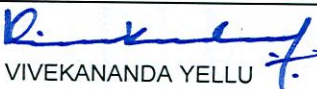
**STANDARD QUALITY ASSURANCE PLAN FOR FORGED FITTINGS
CONFORMING TO ASME SA105 & SA182**

QP NO : QPG: 87
REV.NO: 01
DATE : 05-05-2018

REF: BHEL TDC No. : TDG:104 (latest revision)

SL. NO.	COMPONENT OR OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	TYPE OF RECORD			REMARKS	
								D*	M	B		
1	2	3	4	5	6	7	8	9	10	11	12	13
2.6	Test Piece Marking (TPM)	Selection of Test coupons	Major	Measurement & Marking	One Sample / Heat / Size/ HT Batch	As per ASTM A370		Internal report	X	P	V/ W*	Refer Note : 1
3.0 TESTS												
3.1	Finished product	YS, UTS, % Elongation (Mandatory)	Major	Tensile Strength,	One Sample / Heat / Size/ HT Batch	Material Specn. & BHEL TDG:104		Test Report	X	P	V	
3.2		Product Analysis	Major	Chemical Composition	One Sample / Heat / Size	Material Specn. & BHEL TDG:104		Test Report	X	P	V/ W*	
3.3		Hardness	Major	Hardness test	100% / 10%	Material Specn. & BHEL TDG:104		Test Report	X	P	W	100% for F91/92 ; 10% for others
3.4		Surface Defect	Critical	NDE - LPT	100%	Material Specn. & BHEL TDG:104 Only for SS & Duplex SS items		Test Report	X	P	W	
3.5		Sub-surface Defect	Critical	NDE - MPT	100%	ASTM E709	ASME B31.1 Cl. 136.4.3	Test Report	X	P	W	Wet MPT for F91/92; Dry MPT for others
3.6		Volumetric Defect##	Major	NDE - UT##	100%	ASME SA388	ASME Sev-VIII, Div.2 Cl.3.3.4	Test Report	X	P	W	##: Bars/Rounds: OD = 40mm and above; Others: OD >/= 200mm or Thickness >/= 6mm
3.7		Microstructure (Applicable for F91/92 Fittings)	Major	Metallographic test	One Sample / Heat / Size/ HT Batch	No micro fissures. Microstructure shall show tempered martensite. Grain growth if any has to be examined further.		Test Report (Magnification at 500x)	X	P	W	F92: Delta Ferrite shall be 3% max as per VD TUV 1272 & Refer Note :8
3.8	PMI for AS fittings	Chemical	Major	PMI	100%	Material Specn. & BHEL TDG:104		Test Report	X	P	W	

LEGEND: M:- Manufacturer; B:- BHEL/ BHEL Nominated Agency; P - Perform; V - Verification; R-Review; W - Witness; H - Hold. D* - Documents required if marked "X"

PREPARED & REVIEWED BY: 
Dy.Mgr/QA


APPROVED BY: C VAITHIANATHAN
AGM/QA

REF: BHEL TDC No. : TDG:104 (latest revision)

SL. NO.	COMPONENT OR OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	TYPE OF RECORD		AGENCY			REMARKS
									D*	M	B		
1	2	3	4	5	6	7	8	9	10	11	12	13	
4.0	FINAL INSPECTION												
4.1		Surface check, Bend angle, Radius, End-to-end dimn, Ovality, Thickness, Wrinkles, d1 at ends, Edge preparation & other dimensions as per Drg.	Major	Visual & Measurement	100%	ASME B16.9/B16.11 / BHEL Drg. & P.O.		Report	X	P	W		
4.2		IBR Certification	Major	all tests as per IBR	100%	IBR		FORM-IIIG	X	P	IBR	Refer Note : 11	
4.3		Marking / Color coding	Critical	Visual	100%	BHEL TDG:104 & P.O.		Report	X	P	V	Refer Note : 13	
4.4		Surface Protection, Preservation & Packing	Critical	Visual	100%	BHEL TDG:104 & P.O.		Report	X	P	V	Refer Note : 9 & 12	
5.0	Inspection clearance	Documentation	Critical	Verification	100%	All reports as required in this QAP		Report	X	P	H		

NOTES :-

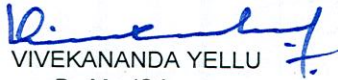

1.0 Seal tranfer on pieces to be cut shall be done by BHEL inspector & IBR for F91/92 materials and only IBR for other than F91/92 materials.

2.0 **POST FORMING HEAT TREATMENT (AFTER FORGING & BEFORE MACHINING):-**
 For F91/92 materials : Normalise at 1050 - 1080 deg.C & Temper at 750-780 deg.C; Soaking shall be 30 minutes minimum for thickness upto 50mm and 1Hr minimum for thickness 51-100mm
 Normalising and Tempering shall be carried out within 72 hours after completion of forming. The items shall be kept dry and stress free. The temperature shall be brought down to room temperature after hot forming before normalizing and also after normalizing before tempering. Normalising and tempering of Gr91/92 shall be done encompassing the entire component.
 SA105 : Normalised; SA182 F11/F12/F22 : Normalised & Tempered.; SS & Duplex SS : Solution Annealead.

3.0 Finished SS & Duplex SS fittings shall be checked for radioactive contamination and reported in raw material(Ingots/Blooms/Billets) manufacturer TC / Mill TC. 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.

4.0 Chemical & Mechanical tests shall be performed at NABL approved laboratories(in-house/outside).

LEGEND: M:- Manufacturer; B:- BHEL/ BHEL Nominated Agency; P - Perform; V - Verification; R-Review; W - Witness; H - Hold. D* - Documents required if marked "X"

PREPARED & REVIEWED BY:  VIVEKANANDA YELLU Dy.Mgr/QA	 APPROVED BY: C VAITHIANATHAN AGM/QA	PAGE : 3 of 4
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**BHARAT HEAVY
ELECTRICALS LIMITED**
PIPING CENTRE, MADRAS – 17
QUALITY ASSURANCE & CONTROL DEPT.

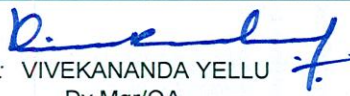
**STANDARD QUALITY ASSURANCE PLAN FOR FORGED FITTINGS
CONFORMING TO ASME SA105 & SA182**


**QP NO : QPG: 87
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REF: BHEL TDC No. : TDG:104 (latest revision)

SL. NO.	COMPONENT OR OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	TYPE OF RECORD			AGENCY			REMARKS
									D*	M	B			
1	2	3	4	5	6	7	8	9	10	11	12	13		
5.0	All NDE procedures with Level-III authorised shall be submitted to BHEL for review. NDE shall be performed by qualified personnel. All NDE shall be done before proof machining.													
6.0	Items shall be visually checked. No hard scales shall be present on inside & outside surfaces.													
7.0	Gas cutting & Plasma cutting are prohibited for F91/92 material.													
8.0	1 replica for the size Nb 80 & below per Heat Treatment batch. 3 replicas in one fitting per Heat Treatment batch. Actual magnification shall be indicated in the photomicrograph. Photomicrographs shall be provided as records for review & acceptance and future in-service reference.													
9.0	All fittings shall be Painted as below when not specified in the P.O./Drawing:- a) Fittings supplied to BHEL's Stores: All items except SS & Duplex SS to be applied with resin type rust preventive coating with visibility to punched and stenciled details on outside. b) Fittings supplied directly to BHEL's Sites(DTS): Surface preparation by Blast cleaning (SSPC-SP10); Primer : 1 coat of 60 microns of In-Organic Ethyl Zinc Silicate primer; Finish : 2 coats of 20 microns each of Heat Resistance Aluminium paint to IS13183 Gr-1; Total DFT : 100microns minimum; Shade: Aluminium The internal surface shall be protected with rust preventive coating or rust inhibitor. Stainless steel and Duplex SS (UNS32205) fittings need not be painted. Pickled & Passivated as per ASTM A380.													
10.0	All items shall be inspected and cleared by BHEL / BHEL authorised Inspection agency & IBR authorities.													
11.0	Necessary IBR Requirements shall be fulfilled and IBR documents to be submitted. a) Well-Known Forger: - (i) Finished Fittings: No further fabrication like Machining/Cutting at shop: Form IIIC. (ii) Semi-Finished Fittings: Form IIIG signed by Forger. b) Not Well-Known Forger: - (i) Finished Fittings: No further fabrication like Machining/Cutting at shop: Form IIIC. (ii) Semi-Finished Fittings: Form IIIG – counter signed by IBR authorities.													
12.0	Machined ends shall be well protected using end caps and suitably packed to avoid transit & other damages. Tack welding is prohibited on F91/92 material.													
13.0	Marking :- a) Items dispatched to Stores : The finished components shall be punched & paint stencilled with Material code, Heat number, material specification, maker's emblem, Inspectors seal and Statutory authorities seal (as applicable) b) DTS (Direct to Project Site) Items :- DTS shall be hard punched and paint stencilled with DU code (14 digit work order du detail) as given by purchase in addition to marking done as per 13 (a). Colour coding : SA105 - Blue ; SA182 F11 - Green & White; F12 - Black & Red; F22 - Blue & Red; F91 - Brown & Red; F92 - Brown & Blue; F316 - Black & Blue; F316L - Blue, Brown & Yellow; Duplex SS - Red, White & Green													

LEGEND: M:- Manufacturer; B:- BHEL/ BHEL Nominated Agency; P - Perform; V - Verification; R-Review; W - Witness; H - Hold. D* - Documents required if marked "X"

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VIVEKANANDA YELLU
Dy.Mgr/QA


APPROVED BY: C VAITHIANATHAN
AGM/QA



1.0 GENERAL

Materials shall meet Indian Boiler Regulations, (IBR) in addition to the latest version of SA105, SA 182 & Code Case 2179 (for SA182 F92) as on date specified in the Purchase Order (PO).

2.0 RAW MATERIAL

- The raw material used shall meet the respective specification and the test certificate shall be furnished.
- 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.
- For SA 182 F91 & F92 (Code Case 2179): The raw material shall be procured from the Mills listed in document ref.QCP:18(latest revision). For raw material sources not listed in QCP:18, credentials shall be submitted by the vendor along with offer for BHEL review and approval. Indigenous vendors shall procure the raw material for other than SA182 F91 & F92 (code case 2179) from IBR approved sources.
- For SA 105: Carbon: 0.25% max.
For SA182 F92: Si: 0.10-0.50%; Ni: 0.30 max and Cu: 0.25 max.
- SS & Duplex SS: All raw materials used in steel making including incoming scrap shall be checked by supplier to ensure freedom from radioactivity.

3.0 PROCESS

- Process of manufacture shall conform to applicable standards.
- Unless otherwise specified in the P.O, SA182 F11/12 items shall be supplied as per class 2 and SA182 F22 shall be of Class 3 only.
- For SA 182 F91 & F92 (Code Case 2179): Steel for forging shall be check tested for product analysis at vendor's works and shall be witnessed by IBR / IBR authorised agency. The check test report along with Mill-TC shall be certified by IBR / IBR authorised agency.
- 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 order to this TDC shall be forged to the nearest shape before machining to final dimensions as per respective drawing.
- Blooms / Billets** used for forgings (Side Length, Dia \geq 50mm) shall be UT tested & for acceptance norm refer sl.5(j). For finished bars this can be done at Final stage.
- Dimensions shall be as per drawings indicated in Purchase Order.

4.0 HEAT TREATMENT

4.1 All items shall be heat treated as below:

SA 105	- Normalised
SA 182 F11/ F12/ F22	- Normalised & Tempered

Stainless Steel & Duplex Stainless Steel ----- Solution Annealed

4.2 SA182 F91 & F92 :-

Normalising Temp. : 1050°C - 1080°C (for wall thickness larger than 75 mm, accelerated cooling may be done to obtain a fully martensitic structure).

Tempering Temp. : 750°C - 780°C Soaking time: 2.5min/mm of thickness (1 hr min.), still air cooling.

5.0 TESTING

- Product analysis:-** Product analysis shall be carried out on One piece / Heat / HT lot / Size.

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- (b) **Corrosion test:-** Corrosion test (IGC) shall be carried out on one piece / Heat / HT lot / Size for SS & Duplex SS items.
- (c) **MPI (After Heat Treatment) :100%:** As per ASTM E 709. Linear Indications like cracks, folds & other injurious defects are unacceptable.
Dry MPI : CS, AS (other than F91, F92) : all sizes.
Wet MPI : SA182 F91, F92 : all sizes.
- (d) **LPI (After Heat Treatment) :100%** for SS & Duplex SS as per ASTM E165, No linear indications acceptable.
- (e) **SS & Duplex 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.
- (f) **Tension test:-**Tension test shall be carried out on one Test piece for each specification, heat, heat treatment lot and size.
- (g) **Bend test:-** (a) Bend test for CS (SA 105) : One sample of 19 mm thick and 25mm width to be bent 180 deg around mandrel of radius 6.35mm.
(b) Bend test for AS (SA182): One Sample of 25.4 mm width and thickness = t to be bent 180 deg around mandrel of radius =1.5 t. Test on representative sample is also acceptable.
- (h) **Photomicrograph test for F91 & F92 :-** Photomicrograph test shall be carried from a specimen of forging in the as finished condition for each individual size (OD & Thickness) from each 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. Photomicrograph with 500x (min) magnification along with Photomicrograph report to be provided. The actual magnification shall be indicated.
- (i) **Hardness test:** - (i) For SA 182 F91 :- 100% of items; Value: 191-250 BHN
(ii) For SA 182 F92 :- 100% of items; Value: 196-250 BHN
(iii) For Duplex SS :- 100% of items; Value – 290 HBW max.
(iv) For other specn :- 10% of items; Value - As per specn
The hardness test values shall be indicated in the Test certificate.
- (j) **Ultrasonic Test:** - All items shall be ultrasonically tested as per SA388 and acceptance norms shall be as per ASME Sec VIII Div .2 Cl. 3.3.4.

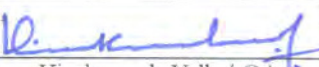
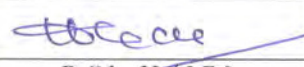

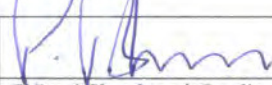
UT Qualification: - For Forged Bars/Rounds: OD = 40mm and above.
For others: OD >= 200mm or Thickness >= 6mm

6.0 POSITIVE MATERIAL IDENTIFICATION (PMI) FOR ALLOY STEEL FITTINGS.

Each alloy steel item shall be checked for the correctness of the material by using X-ray fluorescence principle or spark emission spectrography.

7.0 WORKMANSHIP, FINISH AND REPAIR

All items shall have smooth, workman like finish, and to be free from scale & defects like laps, seams, folds, cracks, etc. Pickled & Passivated as per ASTM A380 for SS & Duplex SS items. Surface defects can be removed by mechanical means and defective areas smoothly dressed up with the adjacent surface. Minimum dimension after repair shall meet drawing / Specification. Repairs by fusion welding are prohibited.

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8.0 PAINTING, COLOUR CODING, MARKING, PACKING & END PROTECTION

8.1 PAINTING: -

Fittings supplied to BHEL's Stores: All items except SS & Duplex SS to be applied with resin type rust preventive coating with visibility to punched and stenciled details on outside.

Fittings supplied directly to BHEL's Sites(DTS):

- Surface preparation:** Blast cleaning
- Primer coat:** One coat of 60 microns of In-Organic Ethyl Zinc Silicate primer.
- Finish coat:** Two coats of 20 microns each of Heat Resistance Aluminium paint to IS13183 Gr-1.
- Total DFT:** 100 microns minimum.
- Shade:** Aluminium -- for all fittings.

The internal surface shall be protected with rust preventive coating or rust inhibitor.

SS & Duplex SS items to be surface treated as per ASTM A380 both inside and outside.

8.2 COLOUR CODING: All items shall be colour coded circumferentially at ends as given below.

SA105	=	Blue
SA182 F11	=	Green & White
SA182 F12	=	Black & Red
SA182 F22	=	Blue & Red
SA182 F91	=	Brown & Red
SA182 F92	=	Brown & Blue
SA182 F316	=	Black & Blue
SA182 F316L	=	Blue, Brown & Yellow
SA182 UNS32205 (Duplex Stainless Steel)	=	Red, White & Green

8.3 MARKING (In English only) :-

8.3.1 The items dispatched to **BHEL Stores** shall be hard punched / etched with Material code, Heat number, material specification, maker's emblem, Inspectors seal and Statutory authorities seal (as applicable).
In addition, the above details along with size shall be paint stencilled on the fittings.

8.3.2 The items dispatched directly to project site as **DTS** shall be hard punched and paint stencilled with DU code (14-digit work order du detail) as given by purchase in addition to marking done as per para 8.3.1.

8.4 **PACKING AND END PROTECTION:** Machined ends of the items shall be well protected using end caps and shall be suitably packed in box / crate to avoid transit & other damages.

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**9.0 INSPECTION & CERTIFICATION (In English only): -**

9.1 All items are to be Inspected at the manufacturer's works by the Inspection agencies / authorities as per IBR and as indicated in the P.O. IBR Forms shall be submitted as indicated below.

A) Well-Known Forger: -

- (i) Finished Fittings: No further fabrication like Machining/Cutting at shop: Form IIIC.
- (ii) Semi-Finished Fittings: Form IIIG signed by Forger.

B) Not Well-Known Forger: -

- (i) Finished Fittings: No further fabrication like Machining/Cutting at shop: Form IIIC.
- (ii) Semi-Finished Fittings: Form IIIG – counter signed by IBR authorities.

The above IBR forms shall be submitted as applicable along with the Work Test Certificate and shall include the following.

1. Test Certificate Number, Manufacturer Name & date.
2. BHEL P.O Number & Amendment Number (if any)
3. BHEL P.O. Serial Number
4. BHEL TDC Number
5. Size-wise Quantity
6. Specification, Grade & Year of code.
7. Heat/Melt Number
8. Steel making / forming process
9. Ladle and product Analysis of Raw Material.
10. IBR approved certificate for manufacturing creep resistance steel in case of indigenous steel makers.
- *11. Product analysis report.
- *12. Tensile Test report
- *13. Bend Test report.
- *14. Intergranular corrosion test report for SS & Duplex SS
- *15. Measured radioactivity levels shall be reported in the Mill test certificate (Not to be recorded in IBR Form).
- *16. Repair details if any, certified copy of TC for starting material.
- *17. Guarantee of HTP shall be given in the test certificate as follows if hydro test is not carried out: - "Forgings are capable of with standing without failure, breakage or impairment of their serviceability a hydrostatic test pressure equal to that prescribed for the specified matching pipe of equivalent material".

*Details furnished in the Test certificate in lieu of chart/report is acceptable.

9.2 The following reports shall be **furnished separately** along with the Form III C/G & MTC indicated in para 9.1 above.

- i. NDE reports for VT, LPI, MPI, UT (Reports in soft copy + hard copy).
- ii. Positive Material identification (PMI) report for Alloy steel.
- iii. Heat Treatment Chart.
- iv. Hardness Test report.
- v. Photomicrograph test report along with photomicrograph with minimum 500 x magnifications.
- vi. Dimensional report (as built drawing with dimensions)

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10.0 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.

11.0 Records of Revisions:-

Revision 02 : Material specification SA 182 F316 added.

Revision 03 : (i) Para 4.0, 6.0 included.

(ii) Para 5.0 (b),(c),(h),(j), 8.0 and 9.0 (17) are revised.

Revision 04 : (i) New material specification SA 182 F92 added.

(ii) Para 1.0, 3.0, 4.2, 5 (f), (g) & 8.2 are revised.

(iii) Para 5 (a) to (h) are modified for better clarity.

Revision 05 : (i) Para 10.0 added.

(ii) Para 2 (c), 3.0, 8.2, 8.3.2 & 9.0 are revised.

(iii) Para 5 (c), 5 (d) & 5 (i) are modified for better clarity.

Revision 06 : (i) Para 2 (b), 3 (e),(g) & 9.0 are revised.

(ii) Para 4.1, 4.2, 5(h), 6.0, 8.1, 8.2, 8.3 & 8.4 are modified for better clarity.

Revision 07 : (i) Para 3 (e) deleted-(Creep Test (Type Test) requirement), further clauses renumbered.

(ii) Para 9.0 revised.

Revision 08 : (i) Para 2.0(b), 3.0(d) & 5.0(g) are revised.

(ii) Para 4.2 modified for better clarity.

Revision 09 : (i) Items : Forged Y-Piece & Forged-Tee are added.

(ii) Para 2.0(b)(e), 5.0(e) & 9.2 are added.

(iii) Para 3.0(e) & 9.0 modified for better clarity.

Revision 10 : (i) Duplex Stainless Steel (UNS32205) added and relevant technical requirements 2(e), 4.1, 5.0(b)(d)(e)&(i), 7.0,8.1 & 9.1(14) are indicated.

(ii) Para 5.0(j) & 8.1 revised.

(iii) Para 9.1 modified w.r.t. IBR form requirements for forgings.

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CORPORATE QUALITY ASSURANCE
SUB-VENDOR QUESTIONNAIRE

i.	Item/Scope of Sub-contracting	
ii.	Address of the registered office	Details of Contact Person (Name, Designation, Mobile, Email)
iii.	Name and Address of the proposed Sub-vendor's works where item is being manufactured	Details of Contact Person: (Name, Designation, Mobile, Email)
iv.	Annual Production Capacity for proposed item/scope of sub-contracting	
v.	Annual production for last 3 years for proposed item/scope of sub-contracting	
vi.	Details of proposed works	
1.	Year of establishment of present works	
2.	Year of commencement of manufacturing at above works	
3.	Details of change in Works address in past (if any)	
4.	Total Area	
	Covered Area	
5.	Factory Registration Certificate	Details attached at Annexure – F2.1
6.	Design/ Research & development set-up (No. of manpower, their qualification, machines & tools employed etc.)	Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design Details attached at Annexure – F2.2 (if applicable)
7.	Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)	Details attached at Annexure – F2.3
8.	After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)	Applicable / Not applicable Details attached at Annexure – F2.4
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any	Details attached at Annexure – F2.5



CORPORATE QUALITY ASSURANCE
SUB-VENDOR QUESTIONNAIRE

10.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing			Details attached at Annexure – F2.6		
11.	Manufacturing facilities (List of machines, special process facilities, material handling etc.)			Details attached at Annexure – F2.7		
12.	Testing facilities (List of testing equipment)			Details attached at Annexure – F2.8		
13.	If manufacturing process involves fabrication then-			Applicable / Not applicable		
	List of qualified Welders			Details attached at Annexure – F2.9		
	List of qualified NDT personnel with area of specialization			(if applicable)		
14.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses			Applicable / Not applicable Details attached at Annexure. –F2.10 (if applicable)		
15.	Supply reference list including recent supplies			Details attached at Annexure – F2.11 (as per format given below)		
<i>Project/ package</i>	<i>Customer Name</i>	<i>Supplied Item (Type/Rating/Model /Capacity/Size etc)</i>	<i>PO ref no/date</i>	<i>Supplied Quantity</i>	<i>Date of Supply</i>	
16.	Product satisfactory performance feedback letter/certificates/End User Feedback			Attached at annexure - F2.12		
17.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) Note:- Reports need not to be submitted			Applicable / Not applicable Details attached at Annexure – F2.13 (if applicable)		
18.	Statutory / mandatory certification for the proposed product			Applicable / Not applicable Details attached at Annexure – F2.14 (if applicable)		
19.	Copy of ISO 9001 certificate (if available)			Attached at Annexure – F2.15		
20.	Product technical catalogues for proposed item (if available)			Details attached at Annexure – F2.16		
Name: _____						
Desig: _____		Sign: _____		Date: _____		

Company's Seal/Stamp:-