



General Note: **BHARAT HEAVY ELECTRICALS LIMITED**

Page:1/2

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

PHONE : 0431-2575458
GRAMS : BHARATELEC
FAX NO: 0431-2520719
E-mail :
Web :

OFFICE COPY	Collective No.	Enquiry Date	Due Date For Quotation
	1402100018	20.09.2021	05.10.2021
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	D17930849001 20NB 90 DEG L R ELBOW As per Drawing no. 3-93-422-05459_R00	NO	600.000	600.00	31.01.22
20	D17930849002 20N B EQUAL TEE As per Drawing no. 3-93-422-05460_R00	NO	300.000	300.00	31.01.22
30	D17930849003 20 NB END CAP As per Drawing no. 3-93-422-05461_R00	NO	100.000	100.00	31.01.22

General Note:

a),,All the SA420Gr.WPL6 Fittings are to be supplied fully meeting the NPCIL Specification PCM-288 Rev.00, Drawings and Special Condition Annexure A. If there is any deviation, the same should be mentioned clearly in the offer itself.

b),,Quantity of the Fittings shall be supplied as per tendered quantity.

c),,Offer will be evaluated on package basis only.

d),,Inspection agency for Indigenous suppliers - BHEL & NPCIL.

e),,Inspection agency for import suppliers - BHEL & NPCIL or NPCIL appointed third party inspection (TPI) agency.

f),,Point wise confirmation for Special Condition Annexure A (Pre-Qualification Criteria), Technical Specification PCM-288 Rev.00 are to be mandatorily filled & signed by the bidder and to be uploaded in NIC portal (<https://eprocurebhel.co.in>) along with Technical Bid (Part 1 bid).

Enclosures:

"LD clause has to be confirmed without fail."

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

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

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

MANAGER / PURCHASE
(FOSSIL BOILERS)



BHARAT HEAVY ELECTRICALS LIMITED

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

Page:2/2

1402100018 / 20.09.2021

23505

PR Links

Material.	PR.No	PR.Item.	Quantity	Acc. Assign	Customer Number
D17930849001	129563878	00010	600.000	/000000	
D17930849002	129563878	00020	300.000	/000000	
D17930849003	129563878	00030	100.000	/000000	

list of suppliers

RFQ-5900000386

Open Tender Dummy Code

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

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

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

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

ANNEXURE-A Rev 01
ENQ.No.1402100018

Dt.18-09-2021

Enquiry Terms & Conditions for Supply of SA420Gr.WPL6 Fittings

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

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

Sl No	BHEL Requirements	Supplier Comments
01	<p>Material specification: Supply of SA420Gr.WPL6 Fittings shall be made strictly as per NPCIL Specification PCM-288 Rev.00, Drawings and Special Condition Annexure A as mentioned in the enquiry.</p>	
02	<p>Specification, Size & Quantity:</p> <p>a) All the SA420Gr.WPL6 Fittings are to be supplied fully meeting the NPCIL Specification PCM-288 Rev.00, Drawings and Special Condition Annexure A. If there is any deviation, the same should be mentioned clearly in the offer itself.</p> <p>b) Quantity of the Fittings shall be supplied as per tendered quantity.</p> <p>c) Offer will be evaluated on package basis only.</p> <p>d) Inspection agency for Indigenous suppliers – BHEL & NPCIL.</p> <p>e) Inspection agency for import suppliers - BHEL & NPCIL or NPCIL appointed third party inspection (TPI) agency.</p> <p>f) Point wise confirmation for Special Condition Annexure A (Pre-Qualification Criteria), Technical Specification PCM-288 Rev.00 are to be mandatorily filled & signed by the bidder and to be uploaded in NIC portal (https://eprocurebhel.co.in) along with Technical Bid (Part 1 bid).</p>	
03	<p>Offer Submission:</p> <p>a) This Tender is hosted in EPS portal & offer to be submitted through EPS portal only. You are requested to submit your 2 parts offer before due date & time of the enquiry through NIC (https://eprocurebhel.co.in) only.</p> <p>b) Offer is to be submitted in TWO part bids system (Technical bid + Price bid) in the E-Procurement NIC PORTAL (https://eprocurebhel.co.in) ONLY.</p> <p>c) Scanned copy of the filled Annexure-A, Tender documents etc., shall be uploaded in the EPS portal.</p> <p>d) At its option, BHEL may consider extending the due date/s for the tender openings. Sufficient notice would be given by BHEL for such extensions and it will be published as corrigendum in following websites, https://eprocurebhel.co.in http://www.bhel.com/tender/</p> <p>e) Acceptance of offer will be subject to existing customer approval.</p>	
04	<p>Reverse Auction</p> <p>BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for 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.</p>	
05	<p>Authorization for participation in EPS portal through DSC: E-Tender. Participation requirements:</p> <p>Either Principal or authorized agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION). Suppliers are advised to go through the FAQ available in the web portal (https://eprocurebhel.co.in). DSC shall be registered for the authorized person and all transaction done using</p>	

	<p>that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally.</p> <p>For foreign Principal In case of Principal (being foreigner), they may apply for DSC through Indian embassy at their country and can register with us for participating in E-tenders. Details of the applicable procedure is available in the webpage http://www.cca.gov.in/cca/.</p> <p>For Indian agent In case of agents participating/registering their DSC (of authorized person), it will be at the sole authorization of principal to their agents to participate on their behalf and all transactions done using that DSC against our tenders shall be known as valid communication and shall binding on principal and is legally valid.</p>	
06	<p>Validity: The offers shall be kept open for acceptance for 120 days from the date of Tender opening. Once the tenders are submitted, rates cannot be changed on any grounds.</p>	
07	<p>Delivery: The offer shall clearly indicate delivery period in fixed number of weeks/Months from the date of Purchase Order.</p>	
08	<p>Goods and Service Tax (GST) Indigenous suppliers:</p> <ul style="list-style-type: none"> • 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. • 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. • All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code). • Invoices will be processed only upon completion of statutory requirement and further subject to following: <ul style="list-style-type: none"> o Vendor declaring such invoice in Form GST ANX-1 o Receipt of Goods or Services and Tax invoice by BHEL • 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 despatch 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). • 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. • 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 • 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. • 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. 	

	<ul style="list-style-type: none"> 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. 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. GST CREDIT: Suppliers are advised to get registered to GSTN portal. Tenderer under "GST credit" shall be preferred. <p>Import Suppliers: Supplier shall mention the HSN code of each item quoted by them in the offer. The HSN shall be mentioned in the Invoice also for each item without fail.</p> <p>Since GST is implemented, the taxes & duties will prevail as per the government notification/ guidelines. Our Provisional GST registration no. is 33AAACB4146P2ZL. However, it will be mandatory to confirm from BHEL for this mentioned GST no. Suppliers may quote their GST no with valid proof in the quotation. Also before quoting of tender it is suggested to consider all the factors in line with GST guidelines for input tax credit to arrive ranking of quoted suppliers.</p>	
09	<p><u>Indigenous vendors – Terms of delivery:</u></p> <ul style="list-style-type: none"> Bidders should submit their offer on FOR Destination -BHEL Stores, Trichy basis. The quote should be inclusive of all charges, including testing, packing & forwarding, inspection, Insurance etc. (Ex-Works offers will not be considered). The soft copies of the Invoice, LR copy & Test certificates shall be forwarded to BHEL immediately after dispatch. 	
10	<p><u>IMPORT Vendors - Terms of Delivery:</u></p> <ol style="list-style-type: none"> Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILO – Liner in Liner Out) basis. Port of loading should be indicated without fail. Port of discharge should be Chennai. The preferred shipment mode "Containerized Cargo or Break Bulk" shall be specified clearly in the offer. <p><u>FOR CFR INCO TERMS – CONTAINERIZED CARGO</u></p> <ol style="list-style-type: none"> For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided. In case of shipment through Containers on CFR basis, the BL should bear the endorsement that "14 free days for Container Detention is applicable". <p><u>BREAKBULK CARGO:</u></p> <ol style="list-style-type: none"> For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis. The materials will be Custom cleared from Port itself. <p><u>INFORMATION TO IMPORT SUPPLIERS:</u></p> <ol style="list-style-type: none"> Indian Customs imposed a penalty on late filing of Bill of Entries (Air/Sea Shipments) by the importer. Bill of Entry is Required to be Filed Latest by the End of Day Preceding the Day (including Holidays) of Arrival of the Vessel for sea shipments and by the end of same day on arrival of air shipment. Penalty for not filing Bill of Entry within the specified time period is Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter). The vendor should furnish the Non-Negotiable Documents (Air Way Bill/Bill of Lading, Commercial Invoice, Packing List, and Certificate of Origin) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge. Vendor will be held responsible for the penalty arises against the late filing of Bill Of entry due to: <ul style="list-style-type: none"> Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival Discrepancy in documents Short landing of Consignments (For shipments on CFR/CPT/CIF/CIP – Chennai Port) All the shipments for the contracts (POs) finalized on CFR -Chennai Port basis 	

	<ul style="list-style-type: none"> (i) 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. (ii) The detention/demurrage charges arising due to the nomination of containers under single BL to different/ multiple CFS by the liner will be deducted from Vendor's bills only. (iii) The detention/demurrage charges arise due to the delay in collection of Delivery Orders from multiple agencies of liner/freight forwarder also whose offices are not at available Chennai, the same amount will be deducted from Vendor's bills only. (iv) Apart from the normal charges like Terminal Handling Charges, Container cleaning Charges, Delivery Order Charges at final port of discharge no other charges will be borne by BHEL. (v) The liner/freight forwarders should be properly communicated by the Vendor for not to claim such charges for issuing Delivery Order. If the liner/freight forwarder claims such charges in their invoices, the same amount will be deducted from the Vendor bills without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden costs or charges are: <ul style="list-style-type: none"> 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. PCS - Port Congestion Surcharge h. LSS - Low Sulphur Surcharge i. Devanning Charges 	
11	<p><u>Transport Conditions for Import:</u></p> <p>The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment.</p> <ul style="list-style-type: none"> a) 14 FREE DAYS for Container detention at final port of destination shall be provided and the same to be endorsed in the Bill of Lading. If there is no free day or less than 14 free days provided by the supplier, the actual cost incurred towards detention charges due to non-availability of above said free days will be recovered from the supplier Invoice. b) In the event of delayed submission of documents/ non-submission of documents by the supplier as per the mutually agreed terms, an amount up to 5% of the invoice value will be retained towards detention/ demurrage & other charges and the difference if any between actual charges and recovery will be settled separately through supplementary invoice. c) In such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading". d) Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading. e) This is required to ensure avoidance of detention/ demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller. 	
12	<p><u>Acceptance of materials supplied:</u></p> <ul style="list-style-type: none"> a) The supply shall strictly as per the specifications in the tender /purchase order. b) Delivery of the ordered items as per the delivery terms in the Purchase Order does not automatically constitute acceptance of the delivered items. c) The acceptance or otherwise of the delivered items will be separately communicated to the supplier by BHEL either through B2B portal or through e mail within 120 days' o from the delivery of items or delivery of the required test certificates /other documents whichever is later. d) In case of rejection of the delivered items, either part or full, the vendor shall replace the rejected items as per the specification in the Purchase order/tender at their cost within specified days/months of communication of rejection to the supplier. e) In case of rejection of the delivered items, either part or full, if the supplier fails to replace the rejected items within the specified days/months of communication of the rejection, the same shall be treated as failure to execute the contract and actions as per the Guidelines for Suspension of Business Dealings with Suppliers /Contractors available in the webpage: http://www.bhel.com/vender_registration/vender.php. would be taken against such supplier. 	

13	<p><u>Payment terms:</u></p> <p><u>Indigenous:</u> BHEL Payment term is 100% direct EFT payment after 60 days from the date of receipt and acceptance of materials.</p> <p><u>Import:</u> BHEL Payment term is 100% payment on CAD basis after 60 days from the date of receipt of documents, specified in PO, at BHEL bank. Respective bank charges to respective account.</p> <p>If supplier insists for LC, only Usance LC with 60 days' credit will be opened one month prior to material readiness, further loading @ 1.5% on the offered value will be considered. Hence supplier shall intimate the material readiness accordingly along with MTC copies for opening of L.C. LC validity period will be 90 days and for any extension, applicable charges will be to supplier's account.</p> <p><u>New Suppliers:</u> For new suppliers not registered with BHEL, Trichy for the product, Payment shall be made 60 days after receipt and acceptance of materials. In case of foreign supplier, first lot of mutually agreed quantity shall be supplied with payment as CAD basis after 60 days from the date of receipt & acceptance of material. If insisted for LC, after acceptance of first lot, only Usance LC with 60 days' credit will be opened one month prior to material readiness.</p>	
14	<p><u>Liquidated Damage (Indigenous & Imports):</u></p> <ol style="list-style-type: none"> 1. Time is the essence of the contract. 2. The ordered items shall be delivered as per the delivery period mentioned in the Purchase Order. 3. In case the supplier supplies the ordered items beyond the delivery period specified, Liquidated Damages -LD - as detailed below shall be will be levied from the supplier without prejudice to any other relief /compensation available to BHEL, Tiruchirappalli under any other condition of the contract/applicable legal provisions. 4. LD shall be 0.5% of the undelivered portion per week or part thereof subject to a maximum of 10% of the total order value. 5. Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value). 6. Indigenous: For "FOR Delivery terms", Lorry way bill date will be taken for LD calculation. Import: For CFR terms, BL date will be considered for LD calculation. 	
15	<p><u>Risk Purchase clause:</u></p> <ol style="list-style-type: none"> a) In the event of any successful Tenderer's failure to fulfil any of the tender / Contract obligations including supply of whole or any part of the ordered items as per Contract / Agreement, BHEL has the right to terminate the contract and purchase from elsewhere ,at the risk and cost of the defaulted supplier, either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated in the contract or if the same were not available, the best and nearest available substitute thereof. The supplier shall be liable for the additional expenditure/difference in Cost, if any, including consequential losses which BHEL may sustain by reason of risk purchase in addition to the applicable LD as per the Purchase order/contract. b) The decision of BHEL with regard to the additional expenditure / difference in cost and consequential losses incurred by BHEL shall be final and binding on the supplier. c) The amount recoverable under risk purchase shall be recovered from the defaulted supplier in all or any of the following manners: <ol style="list-style-type: none"> i) from dues available in the form of Bills payable to defaulted supplier, SD, BGs against the same contract. ii) from the dues payable to defaulted supplier against other contracts in the same Region/Unit /any other region/unit iii) In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against defaulted supplier. 	
16	<p><u>Warranty / Guarantee:</u></p> <p>Supplier to accept guarantee/warranty of "18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier".</p> <p>Supplier shall replace defective material free of cost (inclusive of all Testing, Inspection, TPI, Service charges etc.) up to destination within two months from defect notification date.</p>	

17	<p>Non-Disclosure Agreement(NDA): The bidders shall enter into the Non-disclosure agreement totally voluntarily, with full knowledge of its meaning and without duress. (Format attached).</p>	
18	<p>Patent Right The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.</p>	
19	<p>PARTICULARS TO BE FURNISHED BY FOREIGN VENDORS FOR EVALUATION OF BIDS WITH CUSTOMS DUTY BENEFIT</p> <p>A. Whether PTA/ CEPA or any other agreement/treaty between respective Governments/Countries exists and the same is applicable for your supplies w.r.t this Enquired Items/tender.</p> <p>B. If yes, mention the Concessional Customs Duty (Such Duty Benefits)</p> <p>C. Documentary proof for the applicable Concessional Customs Duty (eg. PTA/ CEPA or other agreement) shall be submitted along with the Part-1 bid.</p> <p>D. Relevant documents and details to avail the above concessional duty benefits by BHEL shall be submitted by the supplier along with dispatch documents</p> <p>E. In the event of seller failing to provide appropriate documents along with dispatch documents for purchasers to avail disclosed concessional duty benefits in India, financial loss, so incurred, will be to the seller's account.</p> <p>Note: Evaluation of the Price bids will be based on the above details only and unless mentioned/furnished by the vendor, Customs Duty benefit will not be applied for evaluation purposes.</p>	<p>VENDOR COMMENTS</p> <p>YES / NO</p> <p>%</p> <p>SUBMITTED/ NOT SUBMITTED</p> <p>CONFIRMED/ NOT CONFIRMED</p> <p>CONFIRMED/ NOT CONFIRMED</p>
20	<p>Role of Agents</p> <p>a. BHEL strongly discourages the engagement of Agents by foreign principals, to deal with BHEL, in BHEL's tenders.</p> <p>b. In case of foreign suppliers representing through their Indian/foreign agents, agency agreement should be submitted, else offer is liable for rejection. Agency agreement requirements attached as separate file and full compliance to it shall be ensured while submitting the same.</p> <p>c. BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL. Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM. Hence in their own interests, prospective tenderers may check with BHEL. The list of banned firms is available on BHEL website www.bhel.com.</p> <p>Vendors/ principals proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk. BHEL shall in no way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions of their Indian agent.</p>	
21	<p>Agency Commission:</p> <p>a) If overseas principal has any tie-up with any third party/ agents, it should be declared while submitting offers.</p> <p>b) In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India, shall invariably be shown separately in the Performa invoice and this will be paid by BHEL in India, in Indian rupees, on satisfactory completion of the contract.</p> <p>c) Copies of current agency agreement / authorization letter in respect of agency commission shall be furnished along with offer.</p> <p>d) For calculation of rupee equivalent agency commission, exchange rate as prevailing on the date of order will be taken.</p>	
22	<p>Evaluation Criteria:</p> <p>The Evaluation Currency for this tender shall be "INR". The offers of vendors will be evaluated on total landed cost to BHEL, Trichy. The evaluation process is as detailed below:</p> <p>Indigenous: Total Landed cost = FOR Rate in INR (A) + Applicable Taxes (B) + Loading for payment term & LD (C) – Applicable input tax credit (D)</p>	

	<p>A. Indigenous vendors submit offers on Free on Road (FOR), Trichy in INR.</p> <p>B. GST and any other charges quoted by indigenous vendors will be added to the base price.</p> <p>C. Loading for payment terms & non-acceptance of Liquidated Damages (LD) will be added to the FOR value for arriving the landed rate.</p> <p>D. However, input credit is availed for GST (SGST, CGST/IGST), hence the same is excluded for arriving at the landed cost.</p> <p>Import: Total Landed cost = CFR Rate in INR (A) + Applicable Duties (B) + Incidental Charges (C) + Loading for payment term & LD (D)</p> <p>A. Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LILo – Liner In Liner Out) basis in foreign currency, which will be converted to INR by multiplying with the Exchange rate (SBI TT Selling rate) as on the technical bid opening date.</p> <p>B. Customs duty, Safe guard duty and antidumping duty as applicable will be added to the INR price.</p> <p>C. Incidental charges of 2.805% will be added to the CFR Value. The incidental charge is inclusive of Insurance, port handling charges, & freight charges for movement from Chennai port to BHEL, Trichy.</p> <p>D. Loading for payment terms & Non-acceptance of Liquidated Damages (LD) will be added to the CFR value for arriving at the landed cost.</p> <p>Note: "In the course of evaluation, if more than one bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 bidders. In case more than one bidder happens to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L1 bidders or their representatives. Ranking will be done accordingly. BHEL decision in such situations shall be final and binding".</p>	
23	<p>General condition:</p> <p>a) Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be submitted / uploaded in ENGLISH language only. If the documents submitted have other than English language, translation of the same shall be provided for evaluation.</p> <p>b) Three sets of documents containing Test certificates, Copies of the approved quality documents and test procedures, DCR and Drawings, etc must be provided along with the supply of Raw materials. Dispatch clearance for material shall be given after acceptance of TC's by BHEL & NPCIL.</p> <p>c) Supplier has to submit Quality documents and related test procedures for approval.</p> <p>d) Shipment of SA420Gr.WPL6 shall be as per the dates mentioned in the enquiry.</p> <p>e) For Indigenous supply, chemical composition and mechanical test are to be carried out in NABL accredited laboratory only.</p> <p>f) Multiple PO may also be placed considering the applicable duty structure of the respective requirement/Qty.</p> <p>g) No revision of prices will be entertained after the tenders are opened.</p> <p>h) For the evaluation purposes, exchange rate (TT selling rate of SBI) as on schedule date of tender opening (Part I, i.e technical bid, in case of two part bid) shall be considered.</p> <p>i) BHEL will consider the ranking after the loading is applied wherever deviations are observed.</p> <p>j) BHEL reserves the right to negotiate L1 rate or re-float the tender opened if L1 price is not the lowest acceptable price to them inter-alia other reasons.</p> <p>k) In the event of our customer order covering this tender being cancelled / placed on hold / otherwise modified, BHEL would be constrained to accordingly cancel / hold / modify the tender / your purchase order at any stage of execution.</p> <p>l) Offer will be evaluated based on Landed cost to BHEL- Trichy on package basis only.</p> <p>m) Vendor should physically weigh the materials before stuffing them into container and incorporate the same in BL and packing slip.</p>	

	<p>n) Offers for partial quantities of a given item are not acceptable to BHEL. While tenderers can quote for some or all the tendered items, no supplier shall quote for partial quantity of any given enquiry item. Such partial offer would not be considered in the enquiry for that item.</p> <p>o) No payment will be made for the excess quantity.</p> <p>p) Offer should be submitted only as per the Unit of Measurement (UOM) specified in the enquiry.</p> <p>q) The offers of the bidders who are on the banned list as also the offer of bidders who engage the services of the banned firms, shall be rejected. The list of banned firms is available on the BHEL website -www.bhel.com.</p> <p>r) Documents not signed and stamped by the authorized signatory of the bidder shall not be accepted and considered for registration / evaluation of the bid etc.</p> <p>s) Any additional documents submitted by supplier / bidder, during processing of registration application / tender or after placement of order, shall not be accepted unless it is submitted with forwarding letter and duly signed and stamped as mentioned above.</p> <p>t) All documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder.</p> <p>u) This Tender is hosted in EPS portal & offer to be submitted through EPS portal only. You are requested to submit your 2 parts offer before due date & time of the enquiry through NIC (https://eprocurebhel.co.in) only. SEALED COVER BIDS / E-MAILS / FAX / MANUAL OFFERS WILL NOT BE ACCEPTED.</p> <p>For any clarification you can contact to rmega@bhel.in, thambi@bhel.in Contact nos. 04312575458 / 04312577492</p>	
24	<p>Fraud Prevention Policy</p> <p>"The bidder along with its associate/collaborators/sub-contractors /consultants/service providers shall strictly adhere to BHEL Fraud prevention policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about fraud or suspected fraud as soon as it comes to their notice."</p>	
25	<p>Suspension of Business Dealings with Suppliers/Contractors:</p> <p>The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms /principal/agents, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com.</p> <p>Integrity commitment, performance of the contract and punitive action thereof:</p> <p>Commitment by BHEL</p> <p>BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity.</p> <p>Commitment by Bidder/ Supplier/ Contractor</p> <ul style="list-style-type: none"> • The bidder/ supplier/ contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India. • The bidder/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL. • The bidder/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL. <p>If any bidder/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in any act, including but not limited to, mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or tampers the tendering process or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such bidder/ supplier/ contractor as per extant guidelines of the company available on www. bhel.com and/or under applicable legal provisions. Guidelines for suspension of business dealings_is available in the webpage: http://www.bhel.com/vender_registration/vender.php.</p>	

26	<p><u>Cartel Formation:</u></p> <p>The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.</p>	
27	<p><u>Resolution of Disputes:</u></p> <p>The Parties agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the contract/tender which the Parties are unable to settle mutually), arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.</p> <p>The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof.</p> <p><u>Notes:</u></p> <ol style="list-style-type: none"> 1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators. 2. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators. <p>The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in Annexure X to this Enquiry Conditions.</p> <p>The Annexure together with its appendices will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in these Enquiry Conditions.</p> <p>Except as provided elsewhere in this Contract, in case amicable settlement is not reached between the parties, in respect of any dispute or difference; arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract ; or , in any manner touching upon the Contract, then, either Party may , by a notice in writing to other Party refer such dispute or difference to sole arbitration of an arbitrator appointed as per the Arbitration and Conciliation Act, 1996 (India) or statutory modification or re-enactment thereof and the rules made thereunder and for the time being in force .</p> <p>The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the parties. Subject as aforesaid, the provision of Arbitration & Conciliation Act 1996 (India) or statutory modification or re-enactment thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceeding under this clause.</p> <p>The seat of arbitration shall be Trichy, Tamil Nadu, India. The cost of arbitration shall be borne as per the award of the Arbitrator. Subject to arbitration in terms of clause above, the Courts at Trichy, Tamil Nadu, India shall have exclusive jurisdiction over any matter arising out of or in connection with this Contract.</p> <p>Notwithstanding the existence or any dispute or difference and/or reference for the arbitration, the vendor shall proceed with and continue without hindrance the performance of its obligation under this Contract with due diligence and expedition in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.</p> <p><u>In Case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:</u></p> <p>In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/Port Trusts <i>inter se</i> and also between CPSEs and Government Departments/Organizations (Excluding disputes concerning Railways, Income Tax, Customs & Excise Departments, such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 4(1)/2013 –DPE (GM)/FTS-1835 dated 22-05-2018.</p>	
28	<p><u>In the event of Force Majeure:</u></p> <p>a. Notwithstanding the provisions contained in other clauses, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure. For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are</p>	

	<p>not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees, lockouts excluding by its management, freight embargoes and Acts of GOD.</p> <p>b. If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty-one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.</p> <p>c. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side.</p> <p>d. In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.</p>	
29	<p>Execution of the order:</p> <p>a. BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s.</p> <p>b. If the inspection fails, the vendor shall offer the material again as per ordered terms and specifications for further inspection.</p> <p>c. The mere act of the pre-dispatch inspection (PDI) does not absolve the Supplier from giving the specifications as agreed upon in the Purchase Order.</p> <p>d. In the case of overseas suppliers Inspection call for carrying out the inspection shall be given 30 days before the scheduled contract delivery date. The Inspection date/s given by the Supplier shall be on firm basis. For local Suppliers the Notice period of Inspection shall be 10 working days.</p> <p>e. In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances at Indian Ports in the case of foreign suppliers.</p>	
30	<p>Set-off Clause: BHEL shall have the right to recover any money which in the sole opinion of BHEL is due from the Contractor from any money due to the Contractor under this Contract or any other contract or from the Security Deposit furnished by the Contractor under this Contract or any other contract.</p>	
31	<p>Caution:</p> <p>a) The suppliers are severely cautioned to note that the price bid document accepts the price in figures only. It does not allow the supplier to write the value by words. Therefore, all care shall be exercised by the supplier while filling in the figures. Once the price bid is opened no option is available for the supplier to retract the offer under any grounds. If a supplier, for any reason whatsoever approaches BHEL with a request for change in the price, it would be treated as going back on the offer submitted. In such cases, action would be initiated by BHEL for suspending further business dealings with such suppliers as per policy of BHEL which prevails at that point of time.</p> <p>b) The language in the tender documents downloaded by the Bidders shall at no point of time be changed, altered or modified in any manner by the Tenderer. If such changes are made by any tenderer, it shall be considered as tampering with BHEL's terms and the offer shall be summarily rejected, whenever it is noticed by BHEL. Such Bidders would be disqualified from the Bidding Process and their offers would be forfeited / Bank Guarantees invoked. They would also not be allowed to participate in future tenders of BHEL.</p>	
32	<p>Special Provisions for Micro and Small Enterprises (MSE) bidders registered as per MSME act: (Subject to participating MSE vendors meeting the tender requirements of BHEL)</p> <p>a) As per Gazette Notification no. S.O. 2119(E) dated 26.06.2020 issued by Ministry of MSME applicable/existing Micro and small suppliers are requested to get registered with Udyam Registration portal and share us the Udyam registration no along with Udyam registration certificate. MSE suppliers can avail the intended benefits only if they submit Udyam registration certificate along with the offer.</p> <p>b) 25% of the tendered quantity is earmarked for MSE suppliers in this tender, subject to participating MSE Vendors should meet the tender requirements of BHEL. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE vendor within the "L1+15% price band", the supply shall be shared proportionately.</p> <p>c) In the event of Non MSE supplier becoming L1 and MSE supplier quotes within the price band of L1+15% and it is not possible to split the tendered quantity on account of reasons like customer contract requirement/technical requirements, then 100% of the quantity will be offered to MSE suppliers subject to acceptance of L1 price by MSE supplier.</p>	

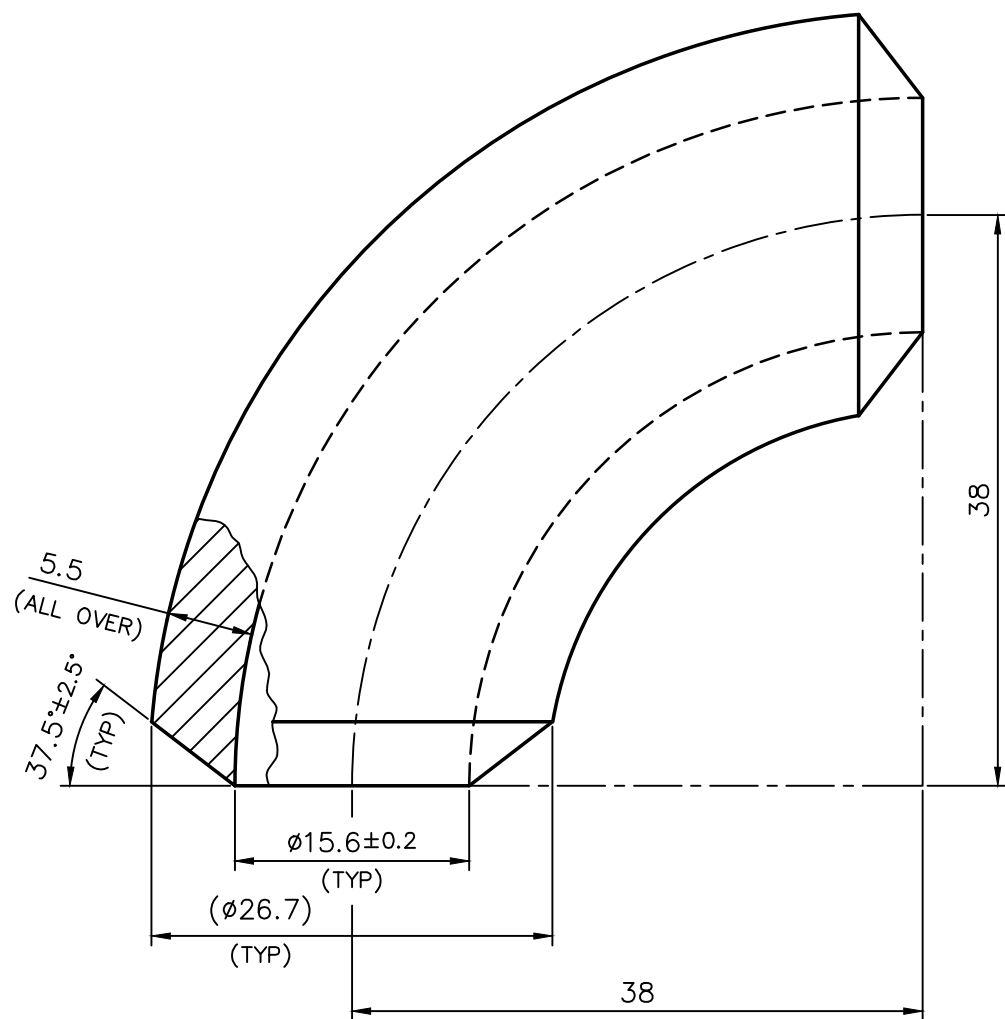
	<p>d) Counter offering of L1 rate will not be made with any MSE vendor whose quoted rate is more than the price band of L1+15%.</p> <p>e) Payment to MSE vendor will be as per the applicable provisions of the MSMED Act 2006.</p> <p>f) If L1 offer is from a Micro / Small enterprise, the 25% earmarking provision is not applicable.</p> <p>g) Out of the 25% tendered quantity reserved for MSE suppliers, 6.25% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs. Apart from this 3% shall be earmarked for procurement from MSE owned by Women entrepreneurs.</p> <p>h) In case of any change in the MSE status of the bidder, it shall be the responsibility of the bidder to notify the change as a part of the bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the bidder as per the procurement policy of BHEL.</p> <p>i) Non submission of Udyam registration certificate will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. However, credentials of all MSE suppliers will be verified before considering the intended benefits for MSE suppliers at the time of tender evaluation. Non submission of Udyam registration certificate will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier.</p>	
33	<p>Preference to Make in India:</p> <p>For this procurement, the local content to categorize a supplier as a class I local supplier/class II local supplier /Non-local 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 respective 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 opening of part II bids against this NIT.</p>	
34	<p>Restrictions for Procurement from a country sharing its land border with India</p> <p>For this procurement, Public procurement order dated 23.07.2020 regarding restrictions under rule 144 (xi) of general financial rules 2017 and clarification dt 08.02.2021 from DoE is applicable. In case of subsequent Orders issued, the same shall be applicable even if issued after issue of this NIT.</p>	
35	<p>Enclosures:</p> <p>a) Enquiry b) PCM-288 Rev.00 c) Special Condition Annexure A</p> <p>d) NDA Format e) Drawings</p>	
<p>M THAMBIDURAI Digitally signed by M THAMBIDURAI Date: 2021.09.20 (On behalf of BHEL) 15:26:45 +05'30'</p>		<p>SIGNED BY MANUFACTURER / MILL</p> <p>Name of Mill: Designation / Department: Seal & Signature</p>

Annexure C

VENDOR DETAILS

SL NO	DESCRIPTION	To be filled by bidder
1	VENDOR NAME	
2	QUOTATION REFERENCE	
3	QUOTATION DATE	
4	TELE, MOBILE NO	
5	FIRM MAIL ID	
6	CONTACT PERSON	
7	OFFICE ADDRESS	
8	ORDER TO BE PLACED ON	
9	COUNTRY OF ORIGIN	
10	QUOTED CURRENCY	
11	PORT OF LOADING	
12	PORT OF DISCHARGE	

Vendor Seal & Sign

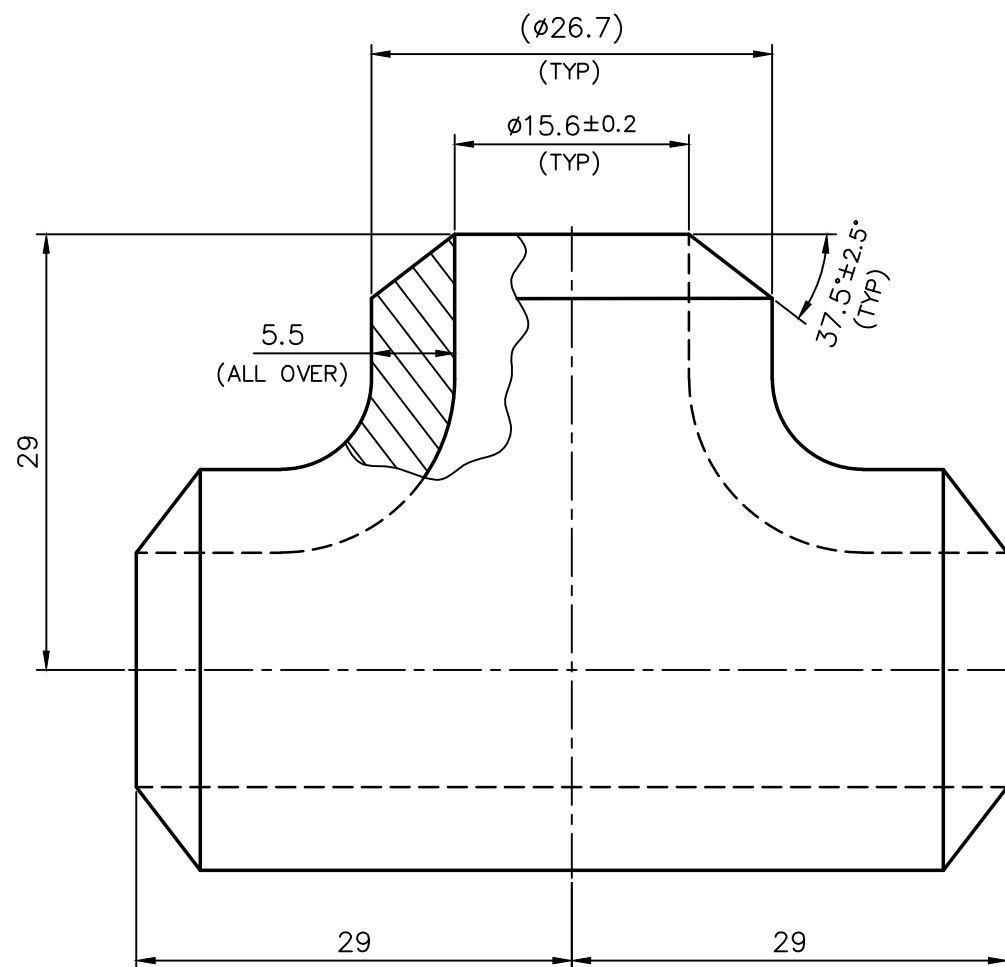


NOTE

01. MATERIAL SPECIFICATION FOR THE FORGED FITTING IS SA-420 Gr.WPL-6 (MODIFIED)
02. MATERIAL, CHEMICAL COMPOSITION, MANUFACTURING, EXAMINATION, TESTING AND PACKING SHALL BE AS PER APPROVED TDC
03. COMPONENT SHALL BE SUPPLIED IN FINISH MACHINED CONDITION
04. OVALITY, CONCENTRICITY AND TOLERANCES OTHER THAN MENTIONED IN THE DRAWING SHALL BE AS PER ANSI B16.9
05. SURFACE FINISH SHALL BE $\sqrt{6.3}$ MICRONS ALL OVER
06. BUTT WELDING EDGE PREPARATION SHALL BE AS SHOWN IN THE DRAWING
07. COMPONENT SHALL BE PROPERLY PROTECTED DURING TRANSPORTATION
08. NO REPAIR BY WELDING SHALL BE PERMITTED ON ELBOW
09. APPROXIMATE FINISHED WEIGHT : 0.16 kg

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		700 MWe REACTOR HEADER W.O.No. D179-001-1-93-422-FLEET (Customer Drg. 700FLEET/33117/2006/DD)					
	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 <small>05-229/D</small>		DRN	NAME	SIGNATURE	DATE	NO. OF VAR	
			CHD	RAMESH S		14.12.20		
			APPD	NITHIN		21.12.20		
		APPD	RA KRISHNAN		24.12.20			
DEPT	NC	GRADE OF UNTOL. DIM	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG		ITEM NO	No OF ITEMS
CODE	150	C/M/F	2:1					
TITLE				CARD CODE	DRAWING NO :		REV	
90° ELBOW (20NB) (LONG RADIUS)				U 01	3-93-422-05459 00			

REV	DATE	ALTERED :
		CHD&APPD :



NOTE

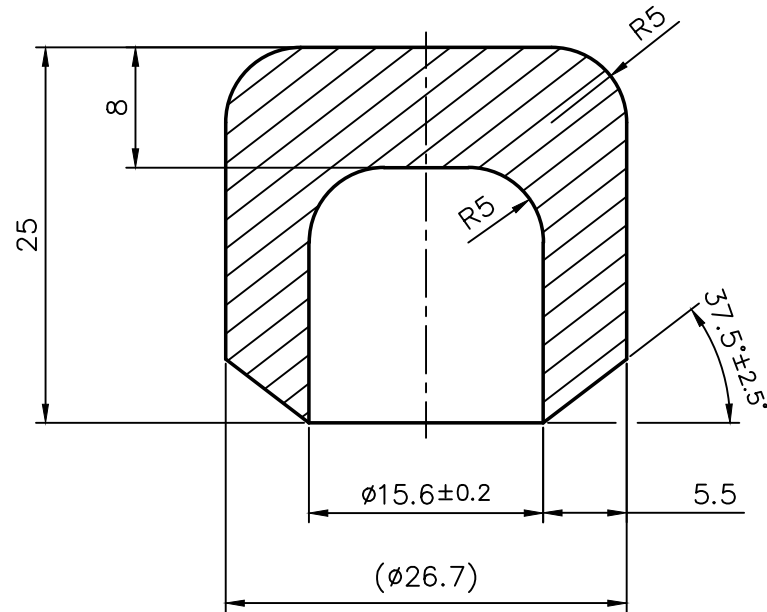
01. MATERIAL SPECIFICATION FOR THE FORGED FITTING IS SA-420 Gr.WPL-6 (MODIFIED)
02. MATERIAL, CHEMICAL COMPOSITION, MANUFACTURING, EXAMINATION, TESTING AND PACKING SHALL BE AS PER APPROVED TDC
03. COMPONENT SHALL BE SUPPLIED IN FINISH MACHINED CONDITION
04. OVALITY, CONCENTRICITY AND TOLERANCES OTHER THAN MENTIONED IN THE DRAWING SHALL BE AS PER ANSI B16.9
05. SURFACE FINISH SHALL BE $\sqrt{6.3}$ MICRONS ALL OVER
06. BUTT WELDING EDGE PREPARATION SHALL BE AS SHOWN IN THE DRAWING
07. COMPONENT SHALL BE PROPERLY PROTECTED DURING TRANSPORTATION
08. NO REPAIR BY WELDING SHALL BE PERMITTED ON TEE
09. APPROXIMATE FINISHED WEIGHT : 0.19 kg

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		700 MWe REACTOR HEADER W.O.No. D179-001-1-93-422-FLEET (Customer Drg. 700FLEET/33117/2006/DD)									
	DEPT NC CODE 150		GRADE OF UNTOL DIM C/M/F		SCALE 2:1		WEIGHT (Kg)		REF TO ASSY / OLD DWG		ITEM NO No OF ITEMS	
	TITLE EQUAL TEE (20NB)		CARD CODE U 01		DRAWING NO : 3-93-422-05460				REV 00			
	BHARAT HEAVY ELECTRICALS LTD UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014 05-229/D		DRN RAMESH S	NAME RAMESH S	SIGNATURE 	DATE 14.12.20	NO. OF VAR	CHD NITHIN	SIGNATURE 	DATE 21.12.20	APPD RA KRISHNAN	SIGNATURE





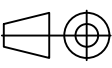
REV	DATE	ALTERED :
		CHD&APPD :

NOTE

01. MATERIAL SPECIFICATION FOR THE FORGED FITTING IS SA-420 Gr.WPL-6 (MODIFIED)
02. MATERIAL, CHEMICAL COMPOSITION, MANUFACTURING, EXAMINATION, TESTING AND PACKING SHALL BE AS PER APPROVED TDC
03. COMPONENT SHALL BE SUPPLIED IN FINISH MACHINED CONDITION
04. OVALITY, CONCENTRICITY AND TOLERANCES OTHER THAN MENTIONED IN THE DRAWING SHALL BE AS PER ANSI B16.9
05. SURFACE FINISH SHALL BE $\sqrt{6.3}$ MICRONS ALL OVER
06. BUTT WELDING EDGE PREPARATION SHALL BE AS SHOWN IN THE DRAWING
07. COMPONENT SHALL BE PROPERLY PROTECTED DURING TRANSPORTATION
08. NO REPAIR BY WELDING SHALL BE PERMITTED ON END CAP
09. APPROXIMATE FINISHED WEIGHT : 0.075 kg



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

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		700 MWe REACTOR HEADER W.O.No. D179-001-1-93-422-FLEET (Customer Drg. 700FLEET/33117/2006/DD)					
 05-229/D	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	NAME RAMESH S	SIGNATURE 	DATE 14.12.20	NO. OF VAR
	CHD	NITHIN	SIGNATURE 		DATE 21.12.20		
	APPD	RA KRISHNAN	SIGNATURE 		DATE 24.12.20		
DEPT NC	GRADE OF UNTOL. DIM C/M/F	SCALE  2:1	WEIGHT (Kg)	REF TO ASSY / OLD DWG		ITEM NO	No OF ITEMS
CODE 150	TITLE END CAP (20NB)		CARD CODE U 01	DRAWING NO : 3-93-422-05461		REV 00	

REV	DATE	ALTERED :
		CHD&APPD :

**NUCLEAR POWER CORPORATION OF INDIA LTD
(A Government of India Enterprise)**

PROJECT : 700MWe
SPECIFICATION NO. : PC-M-288

REVISION NO.	0			
DATE OF REVISION (Months / Year)	July, 2008			
TOTAL NO OF PAGES (Including cover sheet)	19			

**Technical Specification
For
Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components
For Primary System**

USI No.: 33000

Ref: PB-M-8

PREPARED BY	: R. Midha	<i>R. Midha</i>	18-7-08
	: J.K. Saraogi	<i>J.K. Saraogi</i>	18-7-08
CHECKED BY	: T.S. Shetty	<i>T.S. Shetty</i>	18-7-08
REVIEWED BY	: G.M. Arora	<i>G.M. Arora</i>	18.07.08
APPROVED BY	: G.K. Sharma	<i>G.K. Sharma</i>	18.07.08

Name

Signature

Date

First Issue: July, 2008
Issued By : NPCIL

REVISION CONTROL SHEET

DOCUMENT TYPE: SPECIFICATION

NO. : PC-M-288

**TITLE : Technical Specification for Carbon Steel Seamless Pipes,
Pipe Fittings and Piping Components for Primary System**

REV. NO. & DATE	DESCRIPTION OF REVISION	PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 1 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

1.0 SCOPE

This Specification establishes the technical requirements for the material, manufacture, examination, inspection, testing, documentation, identification and packaging of seamless carbon steel pipes, pipe fittings and piping components for Primary System of 700 MWe PHWRs.

2.0 CONTENTS

The requirements of this specification are presented under the following headings:-

	<u>Section</u>
Specifications, codes/standards and drawings	3
Material and Manufacturing Requirements	4
Examination, Inspection and Testing	5
Documentation and Identification	6
Preservation and Packaging for Shipment	7
Technical Information required to be Submitted with Bids	8

3.0 SPECIFICATIONS, CODES/STANDARDS AND DRAWINGS

All Specifications, codes/standards and drawings listed below of the issue in effect on the date of the pertinent tendering documents, apply as specified herein. In the event of any conflict between the provisions of this specification and the documents listed below, the decision of Purchaser shall be final.

3.1 Specifications, Codes/Standards

ASME	:- Boiler and Pressure Vessel Code
	:- Section II – Part A – Ferrous Material Specifications
	:- Section III – Division-1 Sub-Section NB – Class-I Components
	:- Section V – Nondestructive Examination
ANSI	:- Standards of American National Standards Institutes
ANSI- B 1.20.1	:- Pipe Threads, General Purpose (Inch)
ANSI – B 16.5	:- Steel Pipe flanges, Flanged Valves and Fittings
ANSI – B 16.9	:- Factory made Wrought Steel Butt Welding Fittings
ANSI – B 16.11	:- Forged Steel Fittings, Socket-welding and Threaded
ANSI – B 16.25	:- Butt Welding Ends
ANSI – B 16.28	:- Wrought Steel Butt Welding Short Radius Elbows and

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 2 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

Returns

ANSI B-16.36	:- Orifice Flanges
ANSI – B 36.10	:- Wrought Steel and Wrought-Iron Pipe
ANSI – B 46.1	:- Surface Texture
MSS – SP – 25	:- Standard Marking System for Valves, Fittings, Flanges and Unions
MSS- SP-97	:- Integrally Reinforced Forged Branch Outlet Fittings.
ASTM	:- Appropriate standards of American Society for Testing and Materials
SA - 333	:- Specification for Seamless and Welded Steel Pipe for Low Temperature Service
SA - 350	:- Specification for Carbon and Low Alloy Steel Forgings Requiring Notch toughness Testing for Piping Components
SA - 370	:- Test Methods and Definitions For Mechanical testing Of Steel products
SA – 388	:- Standard Practice For Ultrasonic Examination of Heavy Steel Forgings.
SA - 420	:- Specification for Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Low Temperature Service
SA-516	:- Specification for Carbon Steel Plates for Pressure Vessels for Moderate and Low Temperature Service
SA - 530	:- Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe
SA – 577	:- Standard Specification For Straight Beam Ultrasonic Angle Beam Examination Of Steel Plates.
SA – 578	:- Specification For Straight Beam Ultrasonic Examination Of Plain And Clad Steel Plates For Special Applications.
SA – 788	:- Specification For Steel Forgings, General requirements.
ASTM-E-94	:- Recommended Practice for Radiographic Testing
ASTM–E – 112	:- Method for estimating the Average Grain Size of Metals.
ASTM-E-381	:- Method of Macro Etch Testing Products, Inspection and Rating Comprising Steel Bars, Billets, Blooms and Forgings.
SE – 165	:- Standard Method for Liquid Penetrant Inspection
SE – 213	:- Standard Method for Ultrasonic Inspection of Metal Pipe and Tubing
SE – 709	:- Standard Guide for Magnetic Particle Examination.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 3 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

3.2 Drawings

NPCIL/01006/2235/SK :- Butt welding end preparation for flat type consumable inserts

4.0 MATERIAL AND MANUFACTURING REQUIREMENTS

4.1 Material Requirements

4.1.1 General

All pipes, pipe fittings/components shall be new and of high quality carbon steel material and manufacture. All the general requirements specified herein, regarding material, manufacture, examination, inspection and testing shall be applicable to all pipes, pipe fittings/components and shall also be applicable to the starting stock (pipes and forgings) used for the manufacture of pipe fittings/components. All pipes, pipe fittings/components shall be of "SEAMLESS" manufacture.

- a) The steel shall be clean, homogeneous and intrinsically tough and shall be produced by recognized "fine grain melting practice" and shall be fully "killed". The manufacturer shall indicate in the bid the Austenitic grain size guaranteed in the micro structure for their offered products and shall report the grain size actually achieved in the material certificates in the event of an order.
- b) The steel subjected to vacuum treatment and/or refinement is preferred. The manufacturer shall indicate in the bid the particular type of vacuum treatment and/or refinement method used for Purchaser's consideration/evaluation.
- c) The chemical composition shall be in accordance with the particular SA-Material specifications specified herein with the following restrictions on Sulphur, Phosphorus, Chromium and impurity elements:

Chromium	:	0.25% max.
Sulphur	:	0.025% max.
Phosphorus	:	0.025% max.
Aluminium	:	0.04% max
Vanadium	:	0.01% max.
Copper	:	0.30% max.
Cobalt	:	0.02% max.
Nickel	:	0.40% max.
Molybdenum	:	0.10% max.

Following are further additional chemical composition control required for forgings material required for fabrication of venturies.

Tin (Sn)	:	0.11 % max
Arsenic (As)	:	0.025 % max
Antimony (Sb)	:	0.007 % max
Nitrogen (N)	:	0.013 % max

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 4 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

- d) All material product forms shall be supplied in the "Normalized" condition, unless otherwise specified herein and shall be delivered in "pickled" condition. All heat treatment and pickling procedures shall be subjected to purchaser's approval.

Note:- All pipe and pipe fittings shall be pickled to remove loose scale before use for fabrication. (Either at supplier's shop or at site by the contractor)

- e) In addition to the particular SA – Material specification requirements, the following special or supplementary requirements shall be applicable to pipes, pipe fittings / components, where appropriate for the material product forms and as specified herein. However, if any of the following requirements are already called for in the SA – Material specification, then such requirements need not be repeated, provided the scope of testing of the stricter of the two is followed :-

Sl. No	Special/ Supplementary Requirement	Material Product Form	Remarks
1.	Metal Macro Structure/Etching test	Pipe and pipe products	For all sizes: - one sample from each size per lot. For 200 mm NB and above, refer vide Para 4.1.2 and 4.1.3.
2.	Grain size evaluation	All material product forms	For all sizes: one sample per size per lot
3.	Product Analysis (Modified)	All material product forms	Vide 4.1.2 and 4.1.3
4.	Hardness Test	All pipe fittings / components (Forged and/or wrought products)	Vide 4.1.3
5.	Transverse Tension Test	Pipe and pipe products	For 200 mm NB and above, vide Para 4.1.2 and 4.1.3
6.	Flattening test (as per SA 530)	Pipe and pipe products	For 200 mm NB and above, vide Para 4.1.2 and 4.1.3
7.	Fracture Toughness Requirements As called for in ASME Section III-NB	All material product forms	Vide 5.2

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 5 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

Sl. No	Special/ Supplementary Requirement	Material Form	Product	Remarks
8.	Burst Test for qualification of dimensions / design	Special / non-standard pipe fittings and products.		As per code
9.	Hydrostatic Test	All pipes		Vide 4.1.2
		Pipe fittings/components Once for each type of fittings.		Vide 4.1.3
10.	Liquid Penetrant Examination	All material product forms except pipes		Only when magnetic particle examination is not feasible. Permitted only with prior approval of Purchaser.
11.	Magnetic Particle Examination	All material product forms except pipes		
12.	Ultrasonic Examination	All material product forms		
13.	No Repair by Welding	All material product forms		
14.	No bar stock machined products	Pipe fittings		For 50 mm NB and above vide Para 4.1.3

Note : - **Ultrasonic Thickness Gauging:** - In addition to thickness measurement by conventional methods, ultrasonic thickness gauging shall be carried out (in grid pattern) on pipe fittings from each lot on random basis. For elbows the extent of examination shall be minimum 10 % and for other fittings it shall be minimum 2%. If results are found to be unacceptable, the thickness gauging shall be extended on 100% of fittings.

4.1.2 **Pipes**

- a) All pipes shall be of 'SEAMLESS' construction in accordance with SA-333 Grade 6, ANSI-B 36.10, ASME Section III-NB for Class I components and this specification.
- b) Pipes may be hot finished or cold drawn, followed by appropriate heat treatment for controlling and achieving the required microstructure and mechanical properties. The pipes shall be finally bright annealed or normalized. The manufacturing route and condition of each lot of pipe shall be recorded.
- c) Pipes shall be supplied in single random lengths with square cut ends.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 6 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

- d) Each pipe length shall be hydrostatically tested and ultrasonically examined.
- e) Grain size evaluation and fracture toughness tests shall be conducted for each lot. Grain size shall be 5 or finer.
- f) For all pipes 200 mm NB and over in nominal diameter, the supplementary tests viz. Product analysis, Transverse tension test, Flattening test, Metal structure/Etching test, shall be conducted from samples taken from each end of each length of pipes.
- g) No repair by welding is allowed.

4.1.3 Pipe Fittings and Piping Components

- a) All pipe fittings / components shall be in accordance with SA-420 Gr.WPL-6 / SA-350 Gr. LF2 (class-1). The venturies shall be in accordance with SA-350 Gr. LF2 (class-1). They shall meet the requirements of ASME Section III NB for Class I components and this specification. Requirement such as for integral reinforcement for branch openings (NB-3643) and extra thickness at crotch region for SR Elbows (NB-3642) shall be satisfied.
- b) Forged fittings/components shall be forged to as nearly the finished shape and size as possible by hot working. The hot working shall be done in such a way as to cause metal flow in directions most favorable for resisting the stresses encountered in service and as to achieve completely wrought structure. Fittings/components manufactured by hot working or cold forming process shall be appropriately heat treated for controlling and achieving the required micro structure and mechanical properties. Fittings/components shall be finally annealed or normalized. The manufacturing route and condition of each lot of fittings/components shall be recorded.
- c) Fittings shall not be manufactured by machining only from bar stock. However, with prior agreement with Purchaser, small fittings (less than 50 mm NB diameter) whose configuration is nearly a hollow cylinder or uniaxial and nearly parallel to the metal flow lines of the stock, may be machined from "Forged and ultrasonically examined bars only".
- d) Each fittings/component shall be magnetic particle and ultrasonically examined.
- e) For all fittings the supplementary test viz, product analysis, hardness test, grain size evaluation and fracture toughness test and hydrostatic test shall be conducted from samples taken from one representative fittings/component per lot. Grain size shall be 5 or finer.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 7 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

- f) For all fittings/components 200 mm NB and over in nominal diameter, the supplementary tests viz. transverse tension test, flattening test, metal structure/etching test shall be conducted from samples taken from one representative fitting/component per lot.
- g) No repair by welding is allowed.
- h) Standard fittings shall also conform to the appropriate ANSI standards as given below:
- i) Butt welding fittings - ANSI-B-16.9 & ANSI B 16.28
 - ii) Socket welding and screwed fittings - ANSI-B-16.11
 - iii) Threads on screwed fittings - ANSI-B-1.20.1
 - iv) Flanges - ANSI-B-16.5
 - v) Orifice Flanges - ANSI-B-16.36
 - VI) Integrally Reinforced Forged Branch Outlet Fittings - MSS-SP-97
- i) Special Non-standard fittings and piping components, viz headers, branched outlet fittings, lateral tees, etc. not covered by an appropriate ANSI standard shall conform to special dimensional requirements specified by, or to be agreed with the purchaser. The manufacturer shall demonstrate and validate their design by analytical means, supported by tests such as Burst test, the adequacy of such components with respect to compliance with reinforcement, transitions requirements etc. laid down by applicable codes and also establish that the component is equivalent in strength to a pipe of same size and wall thickness. The manufacturing stages/processes and aforesaid test procedures shall be subjected to Purchasers approval.
- j) **Additional Requirements For Venturi Forgings:-**
The forgings required for fabrication of Venturies shall also meet following stricter / additional requirements than indicated at other places in this specification.
- i. Venturi forgings after machining to dimensional requirements as per relevant applicable drawing shall be machined on outer surface (OD) to 3.2 micron surface finish.
 - ii. Grain size shall be 8 or finer as per ASTM E-112.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 8 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

- iii. The hardness tests shall be conducted along the forgings at 200 mm intervals and on both end faces at diametrically opposite mid thickness points.

k) Additional Requirements for Pipe Bends:-

- i) The bend radius, minimum thickness, etc shall be as per NPCIL drawings / documents
- ii) Bend curvature shall be uniform and surfaces shall be free from cracks, bulges, wrinkles, buckles, tooling damage and other injurious defects.
- iii) Bend surface shall be free from discontinuities exceeding acceptance criteria as per ASME Section-III NB and SA 420 / SA 530.
- iv) The minimum thickness requirement on bend portion shall be checked by ultrasonic thickness gauging.
- v) At any section of the formed pipe bend, the difference between the major and minor outside diameter shall not exceed 8% of the nominal pipe diameter as indicated in ASME Section-III NB 4223.2.
- vi) Bend inspection shall also cover checking of bend angle, radius, thickness, ovality & freedom from surface defects.
- vii) The bending equipment details, bending procedures, etc shall be submitted along with bid document. Bidder should indicate thickness reduction expected during bend forming and the starting thickness of pipe to be used for forming bends.

4.2 Surface Finish and End Preparation

- 4.2.1 The surfaces of pipes and fittings and components shall be prepared as required for the examination, inspection and tests called for in para-5.0 – Examination, Inspection and testing.
- 4.2.2 Flange faces shall be carefully machined to ANSI-B-16.5/ B 16.36, except that the surface finish for contact faces shall be 3 microns AARH for all classes of flanges and flange facings. They shall have the specified serrated concentric or spiral finish. The flanges shall be free from any imperfections or radially disposed scratches which shall be cause for rejection of the flanges as it would be impossible to obtain leak tight gasketed joints with such flanges.
- 4.2.3 Butt welding ends of pipe fittings, flanges and components shall be prepared in accordance with Drawing No. NPCIL/01006/2235/SK for Butt Welding End Preparation for flat type consumable inserts, unless specifically otherwise stated in the tendering documents.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 9 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

4.3 Repair of Pipes, Pipe Fittings and Components

- 4.3.1 All the surfaces of pipes, pipe fittings and components shall be smooth and all surface, defects revealed by visual or non-destructive examinations shall be removed as required by ASME Section III NB – 2538 excepting that repair by welding shall not be permitted.
- 4.3.2 Pipes, pipe fittings and components containing sub surface defects which are greater in depth than 5% of the wall thickness or local section thickness (minimum metal path in any direction) respectively, as revealed by the volumetric examination such as ultrasonic / radiographic examination, are not acceptable and shall be rejected or repaired.
- 4.3.3 Repairs by thermal process shall not be performed and all local repairs shall be by mechanical means only, viz. grinding and machining and shall be smoothly blended into the surrounding surface. Removal of any defects, surface or sub surface, shall not reduce the remaining local defect free wall thickness or local minimum section thickness in any direction under the repaired areas to less than 87.5% of the nominal thickness or any specified minimum thickness. All repaired areas shall be re-examined by magnetic particle and the volumetric examination by which the defect was detected, to ensure complete removal of the defect.
- 4.3.4 All the repair areas exceeding in depth the lesser of 5 mm or 10% of the wall or local section thickness shall be reported in the certified material reports giving their description (size, location etc.)
- 4.3.5 However, repair by local grinding/machining shall not be permitted in such portions of particular fitting/component, if it impairs the integrity or function of such fitting/component (e.g. flange faces, high stress/stress concentration areas).

5.0 EXAMINATION, INSPECTION AND TESTING

5.1 General

The manufacturer shall be responsible for and perform all the in-process and final examination, inspection and testing specified herein. The examination, inspection and testing shall be programmed and conducted in a manner satisfactory to the Purchaser and hence the examination, inspection and testing programme and procedures shall be subjected to the prior approval of the purchaser.

The Purchaser or his authorized agency shall have access to the Manufacturer's or their sub-contractors premises at all reasonable times and to the extent necessary to assess compliance with the provisions of the said programme and this specification. Examination, inspection and test reports shall be submitted by the Manufacturer to Purchaser.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 10 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

5.2 Material Inspection and Tests

- a) All material shall be inspected/tested with satisfactory results and accepted in full compliance with the applicable SA – Material specification and in addition with this specification. The material shall be tested in its final finished and heat treated condition at delivery.
- b) i) The pipes, fittings/components shall comply with the impact test requirements of the applicable SA –Specification.
 - ii) In addition, the pipes, fittings/components shall be impact tested and shall comply with the Fracture Toughness requirements in accordance with ASME section III-NB-2300. The impact test temperature (RTNDT + 56⁰C) shall not be higher than + 18⁰C. The impact specimens shall be oriented transverse to the material flow direction wherever the sizes permit.
- c) Documents in the form of certified Material Inspection/Test reports and Mill Certificates that the required tests have been carried out at the source shall be furnished by the Manufacturer to the Purchaser.

5.3 Non-destructive Examination of Pipes, Fittings and Components

5.3.1 Examination of Pipes and Pipe – Stock

- a) Pipes of all sizes shall be examined for both “Longitudinal and Transverse” discontinuities by Ultrasonic examination by scanning with beam directed successively in two opposite circumferential directions and two opposite longitudinal directions. The examination shall be carried out in accordance with ASME Section III NB-2551.
- b) In case of such pipe fittings/components, which cannot be satisfactorily examined by ultrasonic method, their starting pipe stock material shall be ultrasonically examined as in (a) above.

5.3.2 Examination of Pipe Fittings and Piping Components

- a) Each pipe fitting (which includes flanges also) and piping component shall be ultrasonically examined completely to cover its entire volume.
- b) If it is not possible to cover the entire volume in the finished form, the starting stock or semi finished material, shaped nearest to the final form shall be ultrasonically examined completely and subsequently the finished product shall be ultrasonically examined to the maximum extent possible. Further, if the Purchaser deems it necessary the manufacturer shall examine by radiographic method, to Purchaser’s satisfaction, such portion of the finished product which cannot be either ultrasonically examined meaningfully or examined to the required ultrasonic examination acceptance standards. However, this supplementary radiographic examination will be called only for finished products of sizes 100 mm NB (4 inch) and over in nominal diameter.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 11 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

- c) Each pipe fitting (which includes flanges also) and piping component shall be examined by magnetic particle method. This examination shall cover completely all the external surfaces and accessible internal surfaces. The examination shall be repeated with magnetization applied successively in two mutually perpendicular directions over the surfaces. When magnetic particle examination cannot be meaningfully carried out over an entire or part of a fitting/component, liquid penetrant examination may be carried out in such cases with prior approval of the Purchaser.
- d) The Ultrasonic, Radiographic, magnetic particle and liquid penetrant examinations shall be in accordance with ASME Section III-NB-2550. The ultrasonic examination acceptance standards for the starting stock or semi-finished material shall be same as called for the corresponding finished product thicknesses and if any other relaxed acceptance standard is necessitated, it shall be subjected to prior approval of Purchaser.

5.4 **Additional Examination, Inspection and Testing Requirements**

- 5.4.1 All examination, inspection and testing procedures shall be submitted to Purchaser for approval and only after the approval of such procedures shall the work be commenced.
- 5.4.2 All chemicals and fluids such as cleaning agents, penetrants, developers and water used for hydrostatic testing and paints used for marking shall preferably be free from halogen and sulphur. However, in no case more than 25 ppm of halogen and sulphur shall be permitted. Examination materials, chemicals, fluids, or any other material used for examination, inspection and tests shall be removed from the product to achieve a clean-dry surface.
- 5.4.3 Fittings shall be demagnetized immediately after magnetic particle examination.
- 5.4.4 In addition to the above examination, inspection and tests, the finish of all surfaces of all pipes, fittings and flanges shall be inspected visually as required by the basic SA – Material Specifications. This shall include the use of boroscope, dental mirrors or any other devices where necessary.

6.0 **DOCUMENTATION AND IDENTIFICATION**

6.1 **Documentation**

All manufacturing Procedures, Examination/Inspection/Testing programme and procedures, after approval by Purchaser as called for in this Specification, shall form part of documentation. Various Examination, Inspection and Testing data/results obtained their evaluation and disposition etc, shall be

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 12 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

properly documented and certified by the Manufacturer. The final documentation, before issue, shall be countersigned by the Purchaser or his Authorized Agency. At least 4 sets of such final documentation shall be supplied to the Purchaser.

6.2 Identification

- a) Pipes shall be marked in accordance with SA – 530 and the applicable SA-Material Specification.
- b) All fittings and piping components shall be marked in accordance with MSS-SP-25 and the applicable SA – Material Specification.
- c) Screwed fittings shall be marked also to indicate the type of thread.
- d) In addition, all pipes, pipe fittings and piping components shall be identified with this specification no. (PC-M-288) and lot reference number.
- e) Marking shall be by vibro-tool or electro-etching only.
- f) To indicate that the materials have undergone non-destructive examinations an additional material identification shall be painted on each piece as described below:
 - i) Pipes : A continuous longitudinal white strip
 - ii) Fittings : A continuous white strip on the major dimensions but not extending over the machined end preparation.
 - iii) Flanges : A continuous white stripe on the outer circumference of the flange.

7.0 PRESERVATION AND PACKAGING FOR SHIPMENT

- 7.1 The Manufacturer shall not ship the materials without obtaining the clearance for shipment by the Purchaser or his Authorized Agency.
- 7.2 The supplier shall be responsible for preparing, preserving and packing the materials supplied to this specification, to protect them against corrosion and damage of any kind during shipment to the destination and also during storage at site. Protective measures shall be adequate to prevent corrosion in transit and in storage at the destination for a period of about 12 months in a tropical climate.
- 7.3 All material shall be cleaned and coated with removable preservative to prevent corrosion. Welding fittings shall be packaged to protect their weld edge preparations. Pipe and pipe fitting ends shall be sealed by water proof plastic end caps. Flanges shall be packed to protect serrations and prevent

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 13 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

damage. All material shall be packed in weather proof wooden boxes in such a way that materials will not undergo any damage or rusting during shipment, handling and site storage. The packaging shall be subjected to the inspection and approval of Purchaser or his Authorized Representative. Materials used in cleaning, drying, preservation and interior packaging shall satisfy Purchaser and the Supplier shall submit full particulars to Purchaser for prior approval. Arrangements for identifying the size and quantity of material in each container shall satisfy the Purchaser or his authorized representative.

Seaworthy packing shall be required when items are to be transported by sea route.

8.0 **TECHNICAL INFORMATION REQUIRED TO BE SUBMITTED WITH BIDS**

- 1) Catalogue, technical literature indicating product range, manufacturing and testing facilities available at bidder works.
- 2) Confirmation to the effect that the specifications have been clearly understood by the bidder.
- 3) Confirmation to the extent that the material shall be supplied completely in accordance with technical specifications. In case of any deviations from technical specifications, the fact should be clearly brought out giving cross reference to the paragraph no., section no. of this specification.
- 4) Raw material proposed to be used for manufacturing of each type of item. i.e. material specification, size, thickness of raw material to be used for manufacturing pipes and pipe fittings.
- 5) Complete manufacturing sequence with details of the process at each stage.
- 6) Indicate specifically :
 - i) Type of vacuum treatment or refinement method to be used.
 - ii) Meeting additional chemistry control requirements
 - iii) Availability of pickling facility.
- 7) Vendor shall indicate the activities to be carried out in house and furnish the details of sub vendors for manufacturing / inspection activities.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 14 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

APPENDIX – A: STANDARD QUALITY ASSURANCE PLAN FOR PIPES

Sl. No	OPERATION	NPC'S INSPECTION			SAMPLE	INSPECTION
		A	B	C		
1.	Heat Analysis	v			One sample per heat	Checking of test certificates see restrictions of Para 4.1.1 (c)
2.	Heat Treatment	v	v		All pipes must be heat treated	Checking of time temperature chart.
3.	Product Analysis	v			As per material specification and as per Para 4.1.2 (f)	Checking of test certificates see restrictions of Para 4.1.1(c)
4.	Tensile Test	v		v	As per material specification	Witness the test operation
5.	Transverse tension test	v		v	As per Para 4.1.2 (f)	Witness the test operation
6.	Impact test	v		v	As per Para 5.2	Witness the test operation
7.	Grain Size	v		v	One sample from each size per lot	Checking
8.	Flattening Test	v		v	As per Para 4.1.2 (f)	Witness the test operation
9.	Metal macro structure/ Etching test	v			One sample from each size per lot and as per Para 4.1.2 (f)	Checking
10.	Ultrasonic Examination	v	v	v	Each pipe in transverse and longitudinal directions	Witness the test operation
11.	LP Examination	v	v	v	On re-worked areas	Witness the test operation
12.	Hydrostatic Test	v	v	v	Each pipe shall be tested.	Witness the test operation
13.	Dimension Test	v		v	Each pipe shall be checked.	Witness the test operation
14.	Visual Inspection test	v		v	10% random checking	Random checking of inside/outside of pipes to ensure absence of mill scale, degreased condition and dryness.
15.	Marking	v			Each pipe shall be marked	Checking as per Para 6.2
16.	Checking of test certificates	v			All certificates must be checked.	Checking
17.	Preservation and Packing	v			All pipes must be suitably packed	Checking as per Para 7.0
18.	Issue of Third Party Inspection Certificate and Shipping Release Note.	v				

A = Checking of Test Report B = Checking of material or equipment
C = Witnessing of Operation (customer hold point)

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Page No. : 15 of 17 Revision No. : 0

APPENDIX – B: STANDARD QUALITY ASSURANCE PLAN FOR PIPE FITTINGS & PIPING COMPONENTS

Sl. No	OPERATION	NPC'S INSPECTION			SAMPLE	INSPECTION
		A	B	C		
1.	Heat Analysis	v			One sample per raw material size per heat	Checking of test certificates see restrictions of Para 4.1.1 (c)
2.	Ultrasonic test on starting stock / pipe	v	v	v	Only when UTE on final product is not feasible (As per Para 5.3.2)	Prior approval required. Witness the test operation
3.	Heat Treatment	v	v		All pipe fittings must be heat treated	Checking of time temperature chart.
4.	Product Analysis	v			As per material specification and as per Para 4.1.3	Checking of test certificates see restrictions of Para 4.1.1(c)
5.	Tensile Test	v		v	One sample from each size of fitting per lot	Witness the test operation
6.	Transverse tension test	v		v	As per Para 4.1.3	Witness the test operation
7.	Flattening Test	v		v	As per Para 4.1.3	Witness the test operation
8.	Grain Size	v		v	One sample from each size per lot	Checking of Test Certificates. See Para 4.1.3(e) and 4.1.3(j)
9.	Impact test	v		v	As per Para 5.2	Witness the test operation.
10.	Hardness Test	v		v	One sample from each size of fitting per each lot and Para 4.1.3(j)	Witness the test operation
11.	Surface finish and end preparation				Para 4.1.3(j) and Para 4.2	See requirements for Venturi forging, flanges, etc.
12.	Metal macro structure/ Etching test	v			One sample from each size per lot and as per Para 4.1.3	Checking
13.	Ultrasonic test	v	v	v	Each fitting in transverse and longitudinal directions	Witness the test operation
14.	Magnetic Particle Examination (LPE if permitted)	v	v	v	Each fitting	Witness the test operation
15.	Burst test	v	v	v	One sample as per code	For qualification of non-standard and special pipe fittings
16.	Hydrostatic Test	v	v	v	On two samples from each size of fittings per each lot	Witness the test operation at random
17.	Visual Inspection test		v		10% random checking	Check inside/outside surface for absence of mill scale, degreased condition and dryness.
18.	Dimensional check and thread inspection	v		v	Each item	Witness the test operation at random
19.	Ultrasonic Thickness gauging	v	v	v	Thickness gauging in grid pattern. Para 4.1.1.(e)	Witness the test operation at random
20.	Marking	v			Each fitting shall be marked	Checking as per Para 6.2
21.	Checking of test certificates	v			All certificates must be checked.	Review for completeness as per specification
22.	Packing	v			All fittings must be suitably packed	Checking as per Para 7.0
23.	Issue of Third Party Inspection Certificate and Shipping Release Note.					

A = Checking of Test Report B = Checking of material or equipment
C = Witnessing of Operation (customer hold point)

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 16 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

Notes:-

1. The lot number, heat number, coil number, mill test certificate number and its quantity shall be identified at raw material stage for ladle analysis, check test analysis and for product analysis. Random samples for various testing as required by QAP and code / material specification shall be drawn by QA representative and stamped.
2. Original test certificate of raw materials shall be required for review at the time of First Stage Inspection.
3. Manufacturer should use starting stock of pipe of sufficiently higher thickness for making pipe fittings to meet thickness reduction during process of bending, forming, scale removal, grinding (for removal of surface defects if found during visual / MPE / UTE) marking, etc. Manufacturer shall satisfy this aspect to the purchaser's representative before taking up the work.
4. The material test laboratory shall be approved by NPCIL.
5. The heat treatment furnaces shall be in good condition and shall have temperature recorder and checked for calibration by NPCIL QA / Third party QA and the related certificate shall be submitted. The validity of calibration shall not be more than 6 months. The agency for heat treatment shall be approved by NPCIL.
6. The loading and unloading of items in the furnace may be witnessed by NPCIL QA / Third party representative. Heat treatment chart shall be submitted for review.
7. All items shall be identified to avoid mixing and proper identification during inspection and examination.
8. Vendor shall carry out 100 % dimensional check on all pipe fittings.
9. All items shall be visually examined for any imperfections and defects.
10. All NDE examinations (UTE, MPE, LPE, Eddy current testing, radiography, etc.) shall be carried out as per NPCIL approved procedures. The selection of appropriate technique(s) / method(s) shall be approved by NPCIL. Work shall be taken up after approval of procedures.
11. NPCIL QA representative / Third party shall witness 100 % UT examination, 100 % magnetic particle examination and 100 % liquid penetrant examination
12. On removal of surface defects after MPE / LPE (particularly on class-I components) thickness checking shall be carried out by ultrasonic gauging. The UT instrument shall have reference master thickness gauge of required contour and capable of measuring the least count accuracy as required.
13. Suitable Go - NO GO gauges and fixtures may be used for dimensional inspection. Threads shall be examined by plug and ring gauges. These gauges shall have proper certification for accuracy.
14. Material traceability report (indicating material, size, item description, lot no., heat no., NDE report nos., check test certificate, vendor's final certificate no., etc.) shall be submitted.

NUCLEAR POWER CORPORATION OF INDIA LIMITED	
700 MWe	Page No. : 17 of 17
Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings and Piping Components for Primary System	Revision No. : 0

15. Colour coding, bin card and proper tagging along with entry in proper registers shall be maintained to identify the location of material at any point during manufacturing and to avoid mixing of materials.
16. All items shall be stamped by vendor's name / monogram apart from item description, size, serial no., class, material code, rating, grade, etc. and meeting MSS-SP-25 and NPCIL specification. The fittings confirming to NPCIL specification shall be colour coded as mentioned in specification.
17. The history docket containing all test certificates, inspection reports, approved procedures, QAPs along with shipping release shall be submitted in properly bound document along with soft copy on CD.
18. In case, manufacturer intends to use " On line " UTE or eddy current examination or hydro test facility, the required system details shall be submitted for approval for on line witnessing and extent of witnessing.
19. Calibrated instruments shall be used for inspection, examination and testing.
20. Non destructive examinations shall be carried out by personnel qualified to level-1 of ASNT/ISNT and evaluated by ASNT/ ISNT level-II.
21. The portion at the end of pipe which is not examined by Ultrasonic Examination is to be discarded.
22. The visual examination and dimensional check shall cover outer diameter, wall thickness, workmanship, root face, end beveling, end squareness, outer and inner surface finish, out of roundness, straightness, dents on inside / outside surfaces, length, weight, marking, color coding, stamping, stenciling, processing / rolling marks on internal surface, etc.
23. After repair by grinding on parent material up to minimum wall thickness, the repaired area should be blended smoothly to the surrounding surface.
24. Check and ensure consistency and repeatability of detection in ultrasonic examination.
25. The drawing for all non-standard pipe fittings (like branched outlet fittings, lateral tees, etc for which the dimensions are not given in ANSI standards) shall be submitted for NPCIL approval.
26. QA representative shall stamp the inspected items.
27. Vendor shall submit guarantee certificate.

SPECIAL CONDITION ANNEXURE – A

PR No.: 129563878

1. The indented items are required for NPCIL order for Fleet Mode Reactor Headers.
2. Two-part bid, open tender to be floated.
3. **End Use and End User Certificates will not be provided by BHEL.**
4. Supply of Pipe fittings conforming to SA 420 Gr.WPL6 shall be as per NPCIL Specification: **PC-M-288 Rev 00** (“Technical Specification for Carbon Steel Seamless Pipes, Pipe Fittings, and Piping Components for Primary System”). Supplier shall conform.
5. Supplier shall give clause by clause confirmation for all clauses [except 4.1.2, 4.1.3 (j), 5.2 (b) (ii), & Appendix-A] mentioned in NPCIL Technical Specification PC-M-288 Rev 00. Deviations (if any) shall be mentioned in the offer itself.
6. For offer acceptance suppliers should have the capability and experience to produce the Seamless Alloy Steel Pipe Fittings. **Supplier should have supplied the Seamless Alloy Steel Pipe Fittings for nuclear application / Nuclear Power Corporation of India Limited / any other nuclear power station.**
7. **As a documentary proof of supplier’s experience** in manufacturing the Seamless Alloy Steel Pipe Fittings, supplier shall submit the unpriced P.O., Signed Test Certificates (Signed or accepted by Customer/TPI) and Shipping release document/ supply invoice copy/bill of lading/delivery challan with specifications and details of customer as a documentary proof of Supplier’s experience along with the offer.
8. The Supplier shall submit the offer for all the items since all the items indicated in the PR is proposed to be procured from the same Supplier as a package.
9. Quantity given in the indent may increase or decrease and will depend on the requirements of BHEL & NPCIL. Quantity being procured will be finalized before price bid opening.
10. Due to stringent quality requirements, offers from traders/dealers/distributors/stockiest shall not be entertained and will not be considered for evaluation.
11. Offers received will be evaluated by BHEL and NPCIL. Final acceptance of the offers will be based on NPCIL recommendation.
12. Supplier shall submit Quality Documents– Quality Assurance Plan (QAP), Manufacturing Process Plan (MPP) and associated procedures, Material Sampling and Testing Plan (MSTP) and related test procedures, NDE documents (NDE procedures & Technique Sheets) for approval from BHEL & NPCIL after awarding the contract.

N.K.
02/08/2021

Engineering
NITHIN K. KRISHNAN
Sr. Product Engineer
Engg./Advanced Technology Products
BHEL, TRICHY - 620 014.

N.K.
02/08/2021

Quality Assurance
O.R. NITHIN
Deputy Manager
Quality Assurance
BHEL, TRICHY - 620 014

Ashwin
02-08-2021

Material Planning
ASHWIN KUMAR MAROLI
Manager - MP & SC
Advanced Technology Products
BHEL, TRICHY - 620 014. Page 1 | 2

SPECIAL CONDITION ANNEXURE – A

PR No.: 129563878

13. The actual production of material is permitted only after approval of all documents required for manufacturing / inspection / testing activities by BHEL and NPCIL.
14. Inspection agency for imports are BHEL & NPCIL or NPCIL appointed third party inspection (TPI) agency. Inspection agency for indigenous supply are BHEL and NPCIL.
15. Chemical composition and mechanical tests shall be carried out in labs certified as per ISO/IEC 17025 or NABL / Government approved labs.
16. Supplier shall submit test certificates of indented items after completion of manufacturing for review by BHEL & NPCIL. Dispatch clearance will be given after acceptance of the test certificates by BHEL & NPCIL.
17. Documentation: Three sets of documents containing (i.) Test Certificates and respective test reports (ii.) copies of the approved quality documents, records and test procedures, (iii.) NCRs/DCRs (if any) and (iv.) Drawing etc. to be provided along with the supply of the indented items. The supplier shall be responsible for preparation and issue of all certificates, reports and documents which shall be certified by “BHEL” & “NPCIL/TPI”. Such certified final documents shall form part of history dockets and shall be supplied in bound volumes (3 copies) with proper identification. Final documentation shall also be submitted in soft form (pdf format) with proper indexing.
18. Supplier shall submit his technical and commercial bid conforming to the above points as given in this annexure.

Nithin
02/08/2021

Engineering

NITHIN K. KRISHNAN
Sr. Product Engineer
Engg. / Advanced Technology Products
BHEL, TRICHY - 620 014.

Nithin
02/08/2021

Quality Assurance

O.R. NITHIN
Deputy Manager
Quality Assurance
BHEL, TRICHY - 620 014

Ashwin
02/08/2021

Material Planning

ASHWIN KUMAR MAROLI
Manager - MP & SC
Advanced Technology Products
BHEL, TRICHY - 620 014.

ASHWIN KUMAR MAROLI
Manager - MP & SC
Advanced Technology Products
BHEL, TRICHY - 620 014

O.R. NITHIN
Deputy Manager
Quality Assurance
BHEL, TRICHY - 620 014