

TENDER DETAILS

<i>ENQUIRY No.</i>	1402100017	<i>ENQUIRY DATE</i>	17.07.2021.
<i>DESCRIPTION</i>	<i>Supply of SA540 Gr. B24 Class5 Rods as per TDCAT:10 Rev.00</i>	<i>DUE DATE</i>	14.08.2021

Item Sl. No.	Description	Material Code	Unit	Weight
10	ROD Dia.150 x 6000 mm – 10 Nos. (Random Length not acceptable) Tolerance - +3.0/-0.0 mm	D15730576001	Kgs.	8,212.80
20	ROD Dia.280 x 1200 mm – 6 Nos. (Random Length not acceptable) Tolerance - +4.8/-0.0 mm	D15730576002	Kgs.	3,434.20

ATTACHMENTS:

Annexure A - Enquiry Terms and Conditions

Special Condition Annexure A

Annexure C - Vendor details

"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.

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

ANNEXURE-A Rev 01
ENQ.No.1402100017

Dt.15-07-2021

Enquiry Terms & Conditions for Supply of SA540 Gr. B24 Class 5 Rods

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

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

Sl No	BHEL Requirements	Supplier Comments
01	<u>Material specification:</u> Supply of SA540 Gr. B24 Class 5 rods shall be made strictly as per Technical Specification TDCAT:10 Rev 00, Special Condition Annexure A, PC-M-965 and PC-P-979 as mentioned in the enquiry.	
02	<u>Specification, Size & Quantity:</u> - All the SA540 Gr. B24 Class 5 rods are to be supplied fully meeting the Technical Specification TDCAT:10 Rev 00, Special Condition Annexure A, PC-M-965 and PC-P-979. If there is any deviation, the same should be mentioned clearly in the offer itself. - PC-M-965 & PC-P-979 shall be referred for NDE requirements. - The tolerance in total weight +/-10%. Tolerance for Rod Dia.150 mm is +3/-0 mm and Tolerance for Rod Dia.280 mm is +4.8/-0 mm. Quantity of the Rods shall be supplied as per tendered quantity. - Offer will be evaluated on package basis only. - Inspection agency for Indigenous suppliers – BHEL & NPCIL. - Inspection agency for import suppliers - BHEL & NPCIL or NPCIL appointed third party inspection (TPI) agency. - Point wise confirmation for Special Condition Annexure A (Pre-Qualification Criteria), Technical Specification TDCAT:10 Rev.00, PC-M-965 & PC-P-979 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).	
03	<u>Offer Submission:</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. - 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. - Scanned copy of the filled Annexure-A, Tender documents etc., shall be uploaded in the EPS portal. - 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/ - Acceptance of offer will be subject to existing customer approval.	
04	<u>Reverse Auction</u> 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.	

05	Authorization for participation in EPS portal through DSC: E-Tender. Participation requirements: Either Principal or authorized agent shall register their Digital Signature Certificate (DSC) (Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION). Suppliers are advised to go through the FAQ available in the web portal (https://eprocurebhel.co.in). DSC shall be registered for the authorized person and all transaction done using that DSC against our tenders shall be taken as valid communication and shall be binding on principal/agent and is valid legally. 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/. 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.	
06	<u>Validity:</u> 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.	
07	<u>Delivery:</u> The offer shall clearly indicate delivery period in fixed number of weeks/Months from the date of Purchase Order.	
08	<u>Goods and Service Tax (GST)</u> <u>Indigenous suppliers:</u> • 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: - 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. - 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. 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. 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.	
09	<u>Indigenous vendors – Terms of delivery:</u> - 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	<u>IMPORT Vendors - Terms of Delivery:</u> - 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. <u>FOR CFR INCO TERMS – CONTAINERIZED CARGO</u> - 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”. <u>BREAKBULK CARGO:</u> - 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. <u>INFORMATION TO IMPORT SUPPLIERS:</u> - 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: 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) d) All the shipments for the contracts (POs) finalized on CFR -Chennai Port basis (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: - CIC - Container Imbalance Charges/Surcharges - EIC - Equipment Imbalance Charge/Surcharges - CAF - Container/Currency Adjustment Factor - BAF - Bunker adjustment Factor - RDS - Rupee Depreciation Surcharge - CDS - Currency Depreciation Surcharge - PCS - Port Congestion Surcharge - LSS - Low Sulphur Surcharge - Devanning Charges	
11	<u>Transport Conditions for Import:</u> The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment. a) 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	<u>Acceptance of materials supplied:</u> 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	<u>Payment terms:</u> <u>Indigenous:</u> BHEL Payment term is 100% direct EFT payment after 60 days from the date of receipt and acceptance of materials. <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. 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. <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.	
14	<u>Liquidated Damage (Indigenous & Imports):</u> 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	<u>Risk Purchase clause:</u> 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: 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	<u>Warranty / Guarantee:</u> Supplier to accept guarantee/warranty of "18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier". 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.	

17	<u>Non-Disclosure Agreement(NDA):</u> The bidders shall enter into the Non-disclosure agreement totally voluntarily, with full knowledge of its meaning and without duress. (Format attached).	
18	<u>Patent Right</u> The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.	
19	PARTICULARS TO BE FURNISHED BY FOREIGN VENDORS FOR EVALUATION OF BIDS WITH CUSTOMS DUTY BENEFIT	VENDOR COMMENTS
	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.	YES / NO
	B. If yes, mention the Concessional Customs Duty (Such Duty Benefits)	%
	C. Documentary proof for the applicable Concessional Customs Duty (eg. PTA/ CEPA or other agreement) shall be submitted along with the Part-1 bid.	SUBMITTED/ NOT SUBMITTED
	D. Relevant documents and details to avail the above concessional duty benefits by BHEL shall be submitted by the supplier along with dispatch documents	CONFIRMED/ NOT CONFIRMED
	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.	CONFIRMED/ NOT CONFIRMED
	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.	
20	<u>Role of Agents</u> a. BHEL strongly discourages the engagement of Agents by foreign principals, to deal with BHEL, in BHEL's tenders. b. In case of foreign suppliers representing through their Indian/foreign agents, agency agreement should be submitted, else offer is liable for rejection. Agency agreement requirements attached as separate file and full compliance to it shall be ensured while submitting the same. 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 . 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.	
21	<u>Agency Commission:</u> a) If overseas principal has any tie-up with any third party/ agents, it should be declared while submitting offers. 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. c) Copies of current agency agreement / authorization letter in respect of agency commission shall be furnished along with offer. d) For calculation of rupee equivalent agency commission, exchange rate as prevailing on the date of order will be taken.	
22	<u>Evaluation Criteria:</u> 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: <u>Indigenous:</u> Total Landed cost = FOR Rate in INR (A) + Applicable Taxes (B) + Loading for payment term & LD (C) – Applicable input tax credit (D)	

	A. Indigenous vendors submit offers on Free on Road (FOR), Trichy in INR. B. GST and any other charges quoted by indigenous vendors will be added to the base price. C. Loading for payment terms & non-acceptance of Liquidated Damages (LD) will be added to the FOR value for arriving the landed rate. D. However, input credit is availed for GST (SGST, CGST/IGST), hence the same is excluded for arriving at the landed cost. <u>Import:</u> Total Landed cost = CFR Rate in INR (A) + Applicable Duties (B) + Incidental Charges (C) + Loading for payment term & LD (D) A. Import vendors to submit offers on CFR (Cost & Freight), Chennai port (LIFO – Liner In Liner Out) basis in foreign currency, which will be converted to INR by multiplying with the Exchange rate (SBI TT Selling rate) as on the technical bid opening date. B. Customs duty, Safe guard duty and antidumping duty as applicable will be added to the INR price. 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. D. Loading for payment terms & Non-acceptance of Liquidated Damages (LD) will be added to the CFR value for arriving at the landed cost. 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".	
23	<u>General condition:</u> a) Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be submitted / uploaded in ENGLISH language only. If the documents submitted have other than English language, translation of the same shall be provided for evaluation. b) 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. c) Supplier has to submit Quality documents and related test procedures for approval. d) Shipment of SA540 Gr. B24 class5 rods shall be as per the dates mentioned in the enquiry. e) For Indigenous supply, chemical composition and mechanical test are to be carried out in NABL accredited laboratory only. f) Multiple PO may also be placed considering the applicable duty structure of the respective requirement/Qty. g) No revision of prices will be entertained after the tenders are opened. 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. i) BHEL will consider the ranking after the loading is applied wherever deviations are observed. 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. 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. l) Offer will be evaluated based on Landed cost to BHEL- Trichy on package basis only. m) Vendor should physically weigh the materials before stuffing them into container and incorporate the same in BL and packing slip.	

	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. o) No payment will be made for the excess quantity. p) Offer should be submitted only as per the Unit of Measurement (UOM) specified in the enquiry. 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. 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. 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. t) All documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. 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. For any clarification you can contact to rmeqa@bhel.in, thambi@bhel.in Contact nos. 04312575458 / 04312577492	
24	Fraud Prevention Policy "The bidder along with its associate/collaborators/sub-contractors /consultants/service providers shall strictly adhere to BHEL Fraud prevention policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about fraud or suspected fraud as soon as it comes to their notice."	
25	<u>Suspension of Business Dealings with Suppliers/Contractors:</u> 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. Integrity commitment, performance of the contract and punitive action thereof: Commitment by BHEL BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in a transparent and fair manner, and with equity. Commitment by Bidder/ Supplier/ Contractor - 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. 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.	

26	<u>Cartel Formation:</u> 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.	
27	<u>Resolution of Disputes:</u> 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. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof. <u>Notes:</u> 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. 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. 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. 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 . 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. 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. 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. <u>In Case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:</u> 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.	
28	<u>In the event of Force Majeure:</u> a. Notwithstanding the provisions contained in other clauses, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure. For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of the party claiming to be affected by such event and which has caused the non – performance or delay in performance. Such events may include, but are	

	not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees, lockouts excluding by its management, freight embargoes and Acts of GOD. b. If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser/Consignee in writing of such conditions and the cause thereof within twenty-one days of occurrence of such event. Unless otherwise directed by the Purchaser/Consignee in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. c. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side. d. In case due to a Force Majeure event the Purchaser/Consignee is unable to fulfil its contractual commitment and responsibility, the Purchaser/Consignee will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.	
29	<u>Execution of the order:</u> a. BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s. b. If the inspection fails, the vendor shall offer the material again as per ordered terms and specifications for further inspection. 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. 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. 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.	
30	<u>Set-off Clause:</u> 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.	
31	<u>Caution:</u> 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. 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.	
32	<u>Special Provisions for Micro and Small Enterprises (MSE) bidders registered as per MSME act:</u> (Subject to participating MSE vendors meeting the tender requirements of BHEL) 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. 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. 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.	

	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%. e) Payment to MSE vendor will be as per the applicable provisions of the MSMED Act 2006. f) If L1 offer is from a Micro / Small enterprise, the 25% earmarking provision is not applicable. 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. 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. 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.	
33	<u>Preference to Make in India:</u> 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.	
34	<u>Restrictions for Procurement from a country sharing its land border with India</u> 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.	
35	<u>Enclosures:</u> a) Enquiry b) TDCAT:10 Rev.00 c) Special Condition Annexure A d) NDA Format e) PC-M-965 f) PC-P-979	
M THAMBIDU RAI Digitally signed by M THAMBIDURAI Date: 2021.07.16 11:29:32 +05'30' (On behalf of PHD)		<u>SIGNED BY MANUFACTURER / MILL</u> Name of Mill: Designation / Department: Seal & Signature

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	PORT OF LOADING	
11	PORT OF DISCHARGE	

Vendor Seal & Sign



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

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TECHNICAL SPECIFICATION
FOR
FASTENERS OF FERRITIC STEELS

REF. USI NO. : 33111

	NAME	Designation	SIGNATURE	DATE
PREPARED BY	Ajit K Shit	Sr EE	<i>Ajit</i>	11/12/13
	R.K.Gupta	ACE	<i>R.K.Gupta</i>	12/12/13
	Braham Prakash	ACE	<i>Braham Prakash</i>	12/12/13
CHECKED BY	P.B.Rshikesan	ACE	<i>PBR</i>	12/12/13
	D.Ganesh	ACE	<i>D.Ganesh</i>	12/12/13
	M.R.S.Saxena	ACE	<i>M.R.S.Saxena</i>	13/12/13
REVIEWED BY	S.N.Kamath	CE	<i>S.N.Kamath</i>	19.12.13
	M.K.Sharma	CE	<i>M.K.Sharma</i>	20.12.13
APPROVED BY	U.C.Muktibodh	ED (Engg.)	<i>U.C.Muktibodh</i>	20.12.13

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TITLE : FASTENERS OF FERRITIC STEELS

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0 Dec., 2013	Original (Pages : 12)	Ajit K Shit R.K.Gupta Braham Prakash	P.B.Rshikesan D.Ganesh M.R.S.Saxena	S.N.Kamath M.K.Sharma	U.C. Muktibodh

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	ATOMIC POWER PROJECT	Page No. : 1 of 8
	<u>TECHNICAL SPECIFICATION FOR</u> <u>FASTENERS OF FERRITIC STEELS</u>	Rev. No. : 0

1.0 SCOPE

This specification covers the technical requirements for fasteners which include studs, bolts, nuts and washers made of ferritic steels according to TRD 106, AD Markblatt W7, DIN EN 10269 Vd-TuV-Werkstoffblatt 137 and SE – Werkstoffblatt 550-57 ; unless otherwise specified. In case of doubt, more stringent of the requirements shall apply.

The specification is also applicable to the raw materials like rounds and sections used for the manufacture of the above products.

However, acceptance tests shall be conducted on the heat treated (Quenched and Tempered) samples.

This specification is applicable for Steam Generators of projects beyond RAPP-7&8.

2.0 CONTENTS

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

Description	Section
Scope	1.0
Contents	2.0
Chemical Analysis	3.0
Heat Treatment	4.0
Minimum Mechanical Requirements	5.0
Test Specimen Location and Orientation	6.0
Tests	7.0
Non Destructive Examination	8.0
Dimensional Check	9.0
Repairs	10.0

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Procedures and Plans	11.0
Quality Surveillance	12.0
Marking and Identification	13.0
Reports	14.0
Packing and Shipment	15.0

3.0 **CHEMICAL ANALYSIS**

Both product and ladle analysis for each heat shall be done.

The chemical composition of various materials shall comply with the respective provisions of DIN EN 10269 , VdTUV- Werkstoffblatt 137 (8.62) and 337 (latest edition).

4.0 **HEAT TREATMENT**

The fasteners shall be supplied in tempered condition.

5.0 **MINIMUM MECHANICAL REQUIREMENTS**

All the mechanical requirements stipulated herein are minimum requirements and apply to condition after final heat treatment.

Materials shall comply to DIN EN 10269.

Material 20 Ni Cr Mo 14.5 II (Material No.1.6772) shall comply with the requirements laid down in VdTUV-Werkstoffblatt 337 (Latest Edition).

For material 34 Cr Ni Mo 6 (Material No.1.6582) the following minimum mechanical requirements shall be met.

	Room Temp.	350°C
Ultimate tensile strength N/ mm ²	930-1127	735
Yield point (Yp 0.2) N/ mm ²	833	559
% elongation	16	See note.
% reduction in area	45	45

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Note: Although UTS & % elongation at 350°C are not specified, the supplier shall report the actual values obtained during testing in the certificate.

Material 24 Cr Mo5 shall meet all the requirements of DIN EN 10269 latest edition.

Notch Toughness

Axial ISO-V test specimens tested at 20°C shall meet the following:

Lowest individual value = 63 J

Lateral expansion = 0.65 mm minimum

All mechanical tests shall be carried out in accordance with relevant German Standards or equivalent ASTM Standards, unless otherwise specified.

6.0 TEST SPECIMEN LOCATION AND ORIENTATION

6.1 Test specimens shall have their axes in the direction of longitudinal axis of the bar.

For impact specimen, the axis of the notch will be normal to the cylindrical surface.

6.2 For bars of lengths 4 meters and above (in the tempered condition), testing shall be carried out at both ends.

6.3 Sampling depth shall be at least D/2 in axial direction, D/6 in radial from the external tempered surface for studs and bolts and 0.5 S in the case of washers and nuts.

Where, S = Wall thickness and)
D = diameter of bar) at the time of final heat treatment
as per DIN EN 10269)

Test specimen removal and all tests shall be carried out after final tempering treatment.

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7.0 **TESTS**

7.1 Test shall be conducted in accordance with DIN EN 10269.
Test coupons shall be taken from the hardest and softest bars from each melt / heat treatment batch.

7.2 **Product Analysis**

Specimens for product analysis shall be taken from both the ends of each bar.

7.3 **Hardness Test**

Hardness test shall be carried out on both the ends of each bar.

7.4 **Microstructure Examination**

7.4.1 Grain size shall be determined at x 100 magnification on impact tested specimen at each sampling position.

7.4.2 Microstructure shall be examined at x 200 magnification on impact tested specimens at each sampling position.

7.5 **Tensile Test**

At each sampling position two tensile test specimens shall be taken for tests at room temperature and at + 350°C.

7.6 **Impact Test**

At each sampling position one set of three impact specimens shall be taken for test at + 20°C. The % shear fracture shall be reported for each impact test specimen. Lateral expansion shall be measured on each impact test specimen in accordance with ASME SA-370 and shall be reported.

7.7 **Cone Stripping Test**

Nuts shall be subjected to cone stripping test as per SA 194 of ASME Section II Part. A.

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8.0 NON DESTRUCTIVE EXAMINATION

8.1 Ultrasonic Examination

Non destructive examination shall be carried out on bars after final heat treatment and machining but before thread rolling in accordance with SA-388, recommended practice for ultrasonic examination of heavy steel forgings.

Examination of forged bars must be performed from both frontal faces and from the cylindrical surface with normal beam probes.

If evaluation by normal beam probes on the frontal faces are not feasible, the bars shall be examined from the cylindrical surface in to and fro directions by angle beam.

For bars larger than 120 mm in diameter, additional scanning in the circumferential directions (clockwise and counterclockwise) with 35 degree angle beam probes shall be carried out.

The acceptance standards for ultrasonic examination for bars shall be as follows:

Local Indications

- D < 60 mm, CRR – 2 mm.
- D > 60 mm, CRR – 3 mm.
- D > 120 mm, CRR – 4 mm.

Where, CRR = circular reference reflector.

Indications with linear character are not acceptable. Also accumulation of defect indications in close vicinity is not acceptable.

8.2 Magnetic Particle Examination

Each bar after heat treatment and final machining but before thread cutting shall be examined by magnetic particle method (MT) in accordance with PC-P-979. The extent of examination shall be 100%. Demagnetization to a residual magnetism < 2 oersted is required after test. Any linear non axial indications shall be considered unacceptable.

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9.0 **DIMENSIONAL CHECK**

The finished fasteners shall be checked for all dimensions and thread profile, pitch, etc., with the help of thread guage. All measurements shall be recorded.

10.0 **REPAIRS**

No repairs are permitted. All non conformities shall be reported to the purchaser or authorized inspection agency before carrying out remedial measures, if any.

11.0 **PROCEDURES AND PLANS**

The following procedures and plans shall be submitted to the purchaser for review and approval in six copies each before start of manufacture.

- a) Manufacturing plan indicating the sequence of operations and testing, witness and hold points.

Witness point signifies that the manufacturer will intimate date of actual performance of that activity to the Purchaser sufficiently in advance so that purchaser can witness the performance of the activity. However, in case purchaser is not present, the manufacturer can proceed with the job.

Hold point is similar to witness point except that in case of hold point the manufacturer cannot proceed with the activity unless purchaser is present or has given written waiver to proceed without his presence.

- b) Heat treatment plan.
- c) Material testing and sampling plan with sketches showing various specimens.
- d) Mechanical test properties.
- e) Non destructive examination procedure.
- f) Quality Assurance Plan.

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12.0 QUALITY SURVEILLANCE

The fasteners shall be subjected to quality surveillance by the purchaser or his authorized inspection agency during manufacture.

A schedule for sampling and testing shall be submitted to the purchaser for review and approval. The test specimens shall be taken only after they are identified and stamped by purchaser or his authorized inspection agency.

The purchaser or his authorized inspection agency shall witness the tests at various stages. These stages shall be clearly identified in the manufacturing plan to be submitted by the supplier.

The manufacturer shall afford the purchaser or his authorized inspection agency all reasonable facilities to satisfy him that the material is being manufactured in accordance with the specification.

13.0 MARKING AND IDENTIFICATION

All the fasteners shall be marked with the following identifications.

- Melt No.
- Manufacturer's identification.
- Steel grade.
- Inspection agency's stamp.

14.0 REPORTS

Four (4) copies of the following reports shall be submitted to the purchaser immediately after completion of tests / inspection, prior to shipment of the material. The reports shall be submitted in bound volume. One set of test reports/ certificates shall be dispatched along with material for each unit.

- Chemical analysis – Ladle and product.
- Mechanical test report.

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- c) CV impact curve.
- d) Non destructive examination report.
- e) Heat treatment charts.
- f) Visual and dimensional inspection report.
- g) Grain size report with micrographs for microstructure.
- h) Hardness survey report.
- i) Sulfur prints.

Final documentation containing all the above shall also be submitted in soft form (pdf format) with proper indexing.

15.0 **PACKING AND SHIPMENT**

Before shipment, suitable easily removable rust preventive coating shall be applied to ensure sea – worthiness. The fasteners shall be suitably crated to prevent the threaded surfaces from coming in contact with any foreign objects.

Material for each unit shall be packed separately.



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TECHNICAL SPECIFICATION

FOR

MAGNETIC PARTICLE AND LIQUID PENETRANT EXAMINATION

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	NAME	Designation	SIGNATURE	DATE
PREPARED BY	A.K. Shit	Sr. E.E	<i>Ashit</i>	19.11.13
	R.K.Gupta	ACE	<i>R.K.Gupta</i>	21.11.13
	Braham Prakash	ACE	<i>Braham Prakash</i>	22.11.2013
CHECKED BY	P.B.Rshikesan	ACE	<i>PBR</i>	
	D.Ganesh	ACE	<i>D.Ganesh</i>	25/11/13
	M.R.S.Saxena	ACE	<i>M.R.S.</i>	25-11-2013
REVIEWED BY	Sundar Singh	ACE(QA)	<i>Sundar Singh</i>	26.11.2013
	S.N.Kamath	CE	<i>S.N.Kamath</i>	26.11.2013
	M.K.Sharma	CE	<i>M.K.Sharma</i>	26.11.2013
APPROVED BY	U.C.Muktibodh	ED (Engg.)	<i>U.C.Muktibodh</i>	26.11.2013

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0 Nov., 2013	Original (Pages : 10)	A.K. Shit R.K.Gupta Braham Prakash	P.B.Rshikesan D.Ganesh M.R.S.Saxena	Sundar Singh S.N.Kamath M.K.Sharma	U.C. Muktibodh

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 एनपीसीआईएल NPCIL	NUCLEAR POWER CORPORATION OF INDIA LTD	
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	TECHNICAL SPECIFICATION FOR MAGNETIC PARTICLE AND LIQUID PENETRANT EXAMINATION	Rev. No. : 0

1.0 SCOPE

This specification covers the procedure for magnetic particle and liquid penetrant examination of Steam Generator /Pressure Vessel components and welds. This procedure covers the minimum requirements, ASME Section V and other reference codes & standards to be referred for other details.

This specification is applicable for projects beyond RAPP-7&8.

2.0 CONTENTS

The requirements of this Specification are presented under the following headings:

	<u>Section</u>
Scope	1.0
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3.0 SURFACE CONDITION

Surface preparation by grinding or machining or by other method may be employed where surface irregularities may mask indications of unacceptable discontinuities.

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The surface to be examined and all adjacent areas (at least 25 mm from either side) shall be dry and free from any dirt, lint, scale, rust, welding flux, weld spatter, grease, oil etc. These extraneous matters could obscure surface openings or otherwise interfere with examination.

The surface to be examined shall be cleaned with detergents, organic solvents, de-scaling solutions or paint removers. Degreasing and ultrasonic cleaning may be employed to increase cleaning efficiency.

The surface finish for proof machined items shall be better than 6.3 microns. For rolled sheets, surface finish of less than or equal to 10 μm is required.

4.0 MAGNETIC PARTICLE EXAMINATION

4.1 This method involves the magnetization of an area to be examined and the application of ferromagnetic particles to the surface. The particles gather at areas of magnetic flux leakage and form indications characteristic of the type of discontinuity detected.

4.2 Magnetization shall be done by direct or half wave rectified current. Use of A.C./Yoke method requires specific approval of the purchaser. Magnetization must be done in two directions as far as possible, at an angle of 90° to each other. If the source of magnetizing current with an open circuit voltage is more than 25 volts, Vanadium steel or aluminum, rather than copper tipped prods are recommended, to avoid copper penetration.

4.2 Field Intensity

The field intensity should range between 25 and 40 oersteds during the testing, and shall be checked during each variation of test equipment, wall thickness and geometry of the components. The field intensity shall be measured using suitable device. Estimation of field intensity based on current and prod spacing is not acceptable.

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4.3 Duration of Magnetization

The following values shall be used for magnetization and deposition periods.

Magnetization and particle deposition : 10 Seconds

Re-magnetization : 10 Seconds minimum

Depending upon power concentration examination position and shape of the work piece, durations from the above values may be necessary. The time actually needed shall therefore be determined for each area to be examined.

4.4 Demagnetization

Demagnetization of components, if necessary, shall be carried out by using decreasing alternating current field. The value of magnetic field after demagnetization shall be less than 3 Gauss.

4.5 Examination Medium

4.5.1 Wet Particles

The liquid medium in which magnetic particles are suspended shall be suitably treated, depending upon further process of work piece (e.g. oil can cause porosity during subsequent welding). While using water, rust preventive, antifreeze additives etc., shall be added. Periodical checking up of bath strength should be done as per ASTM-E-138.

4.5.2 Dry Particles

Dry particles method is permitted. Care shall be taken to ensure that powder is adequately dry. An applicator shall be used for rapid and uniform application of the dry powder. Care shall be taken to dust on the powder very lightly and sparingly. A low velocity low pressure air-stream from a hand bulb or a small air-hose may be used to remove excess powder.

4.5.3 Contrast

The powder shall be of a color that will provide adequate contrast with the background of the surface being inspected. The contrast can be improved by

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applying a thin coat of fast drying white varnish. (Such varnish coat, results in more precise flaw detection due to the smooth surface). Such varnish shall not have halogen and sulfur content more than 25 ppm each. Varnish coat shall be removed after the test. If fluorescent particles are used, the examination is to be conducted in a darkened area, using filtered "Black light", with an intensity reading at least 1000 LUX at the work.

4.6 Prod Contact Points

The prod contact points shall be marked, dressed and checked by Dye penetrant. Care shall be taken to keep the prod contact points as few as possible. The current shall be switched on only after proper contact has been established.

4.7 Field Monitoring

Field intensity direction and powder suspension shall be controlled periodically during the test by using Bertholds test plate or field indicator as per ASME Section V.

4.8 Recording of Indications

Recording of indications as permanent records if required (as per referencing document) shall be done on transparent adhesive tapes. These indications shall be transferred on to a paper and preserved with proper identification.

5.0 LIQUID PENETRANT EXAMINATION

5.1 General

In principle, liquid penetrant is applied to the surface to be examined and allowed to enter in-to the discontinuities. Excess penetrant removed, the part dried and a developer applied. The developer functions both as a blotter to absorb penetrant that has been trapped in discontinuities and as a contrasting back-ground to enhance the visibility of penetrant indications.

Either a colour contrast or fluorescent penetrant method may be used. Any one of the following penetrants shall be used.

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- Solvent removable
- Post Emulsifying
- Water washable

For nickel base alloys and/or for stainless steel materials the penetrant materials, cleaner, penetrant, developer, etc., used shall not contain Sulphur or Halogen above 25 PPM.

Only NPC approved penetrant materials to be used for testing. Latest list of approved brand of NDT material to be obtained from QA Directorate, NPCIL.

Selection of liquid penetrant material shall be from the same family (brand). Inter-mixing of family of liquid penetrant materials is not permitted.

5.2 Test Procedure

5.2.1 Application of Penetrant

Penetrant shall be applied by means of brushing or spraying. In case, compressed air type apparatus is used for spraying the penetrant, filters shall be placed on the upstream side near the air inlet to preclude contamination of the penetrant by oil, water or dirt sediments that may have collected in the lines.

The entire test surface (including at least 25 mm from either side of area to be examined) shall be covered by the penetrant.

5.2.2 Penetration Time & Temperature

Duration of penetration and test temperature shall be in accordance with ASTM-E-165. Sufficient penetrant shall be applied during the period of test to prevent drying of penetrant upon the surface.

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5.2.3 Removal of Excess Penetrant

After the penetration time specified in the procedure has elapsed, any penetrant remaining on the surface shall be removed, taking care to minimize removal of penetrant from discontinuities.

When chemical solvent is being used as the cleaner, care should be taken to ensure that the penetrant is not removed from the flaws.

When the cleaner is water, the pressure of the jet should be kept low (not exceeding 3.5 Kg/cm² and temperature below 43°C).

5.2.4 Application of Developer

The developer shall be applied with spray nozzle of a Spray Gun. The developer shall be sprayed on the entire test surface in such a way that a uniform thin layer is deposited.

5.2.5 Examination and Interpretation of test results

When using the liquid penetrant inspection, the interpretation shall be restricted to, citing the presence or absence of flaws, their general nature magnitude and location. Evaluation of raw material and weld seams shall be performed after the following durations.

- First time after drying of developer.
- After half hour
- After 1 hour

All results shall be recorded and evaluated.

6.0 LIGHTING CONDITIONS

- When conducting an examination under white lighting conditions, the inspector shall ensure that the level of lighting is adequate at the surface of the part (recommended minimum 100 foot candles or 1000 lux).

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6.2 Examinations under ultra violet lighting should have a background white light level of less than 20 lux and an ultra violet intensity at the test surface of not less than 1000 μ W/cm².

6.3 The inspector shall allow at least 5 minutes for dark adaptation before beginning the inspection.

6.4 If the examiner wears glasses or lenses, they shall not be photosensitive.

7.0 ACCEPTANCE STANDARDS

7.1 All indications shall be evaluated in terms of the acceptance standards of the referencing "EXAMINATION AND TESTING SPECIFICATION".

7.2 Broad areas of pigmentation which could mask indications of discontinuities are unacceptable and the areas should be cleaned and re-examined.

8.0 PROCEDURE QUALIFICATION

Detailed procedure shall be prepared by supplier for these surface examinations separately and shall be submitted to purchaser approval. Before application of the procedure, the supplier shall demonstrate that the procedure strictly conforms to the stipulations laid down in the preceding paragraphs and meets all requirements of referencing codes and standards of the product.

9.0 PERSONNEL QUALIFICATION

Personnel performing non-destructive examination and evaluation shall be trained, qualified and certified to Level II or Level – III as per recommended practice IS-13805/ISO-9712-3/SNT-TC-1A or any other recognized practice.

10.0 POST CLEANING

Surfaces examined shall be cleaned after evaluation of the test with dry cotton cloth with or without using solvent/cleaner.

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11.0 REPORT

Record for each examination shall be prepared in a format, containing all details including the details of the technique adopted and analysis of the results and shall be submitted to purchaser.

SPECIAL CONDITION ANNEXURE – A

PR No.: 129265626

1. The indented items are required for NPCIL/Gorakhpur Haryana Anu Vidyut Pariyojina (GHAVP) -1 & 2, 700MWe Steam Generator Project.
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 alloy steel bolting material as per SA 540 Gr. B24 Class 5 and technical specification TDCAT:10 Rev 00. Supplier to confirm.
5. Supplier to give clause by clause confirmation for all clauses mentioned in TDCAT:10 Rev 00. Deviations shall be mentioned in the offer itself. As part of TDCAT:10 Rev.00, PC-M-965 & PC-P-979 shall be referred, *for NDE requirements.*
6. For offer acceptance, Suppliers should have the capability and experience to produce alloy steel bolting material as per quality standards. Also, Supplier should have supplied the alloy steel bolting material for the nuclear application / Nuclear Power Corporation of India Limited / any Thermal Power station/ Industrial boiler application.
7. As a documentary proof of supplier's experience in manufacturing the alloy steel bolting material, supplier shall submit the unpriced P.O., Signed Test Certificates (Signed by Customer/TPI)/ Shipping release document/ supply invoice copy with specifications and details of customer shall be submitted along with the offer.
8. Offers received will be evaluated by BHEL and NPCIL. Final acceptance of the offers will be based on NPCIL recommendation.
9. Supplier has to 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 procedures & Technique Sheets for approval from BHEL & NPCIL after awarding the contract.
10. The actual production of material is permitted only after approval of all documents required for manufacturing / inspection / testing activities by BHEL and NPCIL.
11. Inspection agency for imports are BHEL & NPCIL or NPCIL appointed third party inspection (TPI) agency. Inspection agency for indigenous supply are BHEL and NPCIL.
12. Due to stringent quality requirements, offers from traders/dealers/distributors/stockist shall not be entertained and will not be considered for evaluation.

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09/07/2021

Engineering

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08/07/2021

Quality Assurance

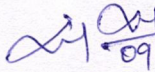
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Material Planning

SPECIAL CONDITION ANNEXURE – A

PR No.: 129265626

13. Chemical composition and mechanical tests shall be carried out in labs certified as per ISO/IEC 17025 or NABL / Government approved labs.
14. Supplier shall submit Test Certificates of finished materials for our review. Dispatch clearance will be given after acceptance of Test Certificates by BHEL & NPCIL.
15. Documentation: Three sets of documents containing (i.) Test Certificates and respective test reports (ii.) copies of the approved quality documents and test procedure, (iii.) design change requisitions (if any) and (iv.) Drawing etc. to be provided along with the supply of items.
16. All the items shall be procured from single source on full package basis.
17. Supplier to submit his technical and commercial bid conforming to the above points as given in this annexure.


09/07/2021

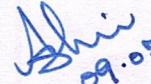
Engineering

M. ARUN KUMAR
Deputy Manager
Engg & RPD / ATP
BHEL, TRICHY - 620 014


08/07/2021

Quality Assurance

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


09.07.21

Material Planning

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



BHEL, Tiruchirappalli – 14.
Quality Assurance
Technical Delivery Conditions

Doc No: TDCAT:10 Rev 00

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**Specification for Rods for Alloy Steel Bolting: Hanger Rod, Hex. Nut & Lock Nut for SG
Vertical Support Assembly
(ASME Sec IIA- SA 540 Gr. B24 CLASS 5)**

(W.O: D157 - D160 – 700MWe SG)

NPCIL Project: GHAVP-1&2

(NPCIL PO No: CMM/FTP/10-33-1-1158/e-PO/22549 dated 08/03/2018)

Rev No	Date	Prepared	Reviewed		Approved
		BHEL/QA	BHEL/ Engg.	BHEL/MP	BHEL/QA
00	13.03.2021	 Nithin. O.R.	 Arun Kumar. E.	 Seikholiien Haokip	 S. Lakshmi

Rev 00: First Issue

न्यूक्लियर पावर कॉर्पोरेशन ऑफ इंडिया लिमिटेड
NUCLEAR POWER CORPORATION OF INDIA LTD.

☒ अनुमोदित / APPROVED
☐ टिप्पणी के अनुसार अनुमोदित / APPROVED AS NOTED
☐ संशोधन को आगे बढ़ाएं / रोकें ।
PROCEED WITH / HOLD FABRICATION
☐ अंतिम ट्रांसपेरेंसी एवं प्रतियाँ भेजें ।
SEND FINAL TRANSPARENCIES & PRINTS
☐ संशोधन करें एवं अनुमोदन के लिए पुनः प्रस्तुत करें।
REVISE AND RESUBMIT FOR APPROVAL

जाँचकर्ता CHECKED BY 25/3/21	समीक्षकर्ता REVIEWED BY 19/04/21	अनुमोदन कर्ता APPROVED BY 12/4/2021
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दिए जानेवाले कार्य का अनुमोदन आपूर्तिकर्ता को विनिर्देशनों के अनुसार
आपूर्ति के उत्तरदायित्व से मुक्त नहीं करता ।
The Approval of the work to be done does not relieve the supplier of
responsibility of supply according to specifications.



1.0 Scope

- 1.1 This specification covers the requirement for material, manufacture, inspection, examination, testing and supply of special quality alloy steel rods for bolting material conforming to ASME Sec IIA- SA 540 Gr. B24 CLASS 5 (and General Requirements as per SA962). This specification is intended for ASME Sec III-NF Class-1 Supports material. In case of any conflict between standard/code & requirements in this specification, the requirements which are most stringent will govern.

2.0 Applicable Documents

- 2.1 ASME Sec IIA-SA540/Latest, ASME Sec IIINF/Latest, ASME sec V., SA388, PC-M-965, PC-P-979.

3.0 Material

- 3.1 Material Specification : ASME Sec IIA- SA 540 Gr. B24 CLASS 5
3.2 Additional Requirements : As listed below (Supplementary to the above material specifications)
3.3 Size : As per Purchase Order (PO) /Drawing No:
3.4 Quantity : As per Purchase Order (PO).

4.0 Chemical Composition & Process

- 4.1 Material shall be of Fully Killed steel.
4.2 Material shall be melted to fine grain melting practice & Vacuum Degassed. The grain size shall be of ≥ 5 at 100X magnification.
4.3 Ladle analysis: Chemistry shall be controlled as per material specification. Product analysis shall be as per supplementary requirement-S1 of SA540.
4.4 Macro analysis on the ingot (per Heat) shall be performed and acceptance is as per ASME Sec IIA-SA962 (Visual examination of transverse sections shall show no imperfections worse than the macrographs of Method ASTM E381: S2-R2-C3). Photograph shall be included in TC.

5.0 Supply Condition (Delivery Condition):

- 5.1 Rods for Bolting material shall be supplied in hot rolled or hot forged, Liquid quenched and Tempered.

6.0 Mechanical, Metallurgical & Chemical test requirement and extent of test:

Mechanical Tests shall be carried out on Quenched and Tempered Material. One test coupon shall be removed from each end of one rod per size per heat and per Heat Treatment Batch. Following tests shall be conducted on each test coupon drawn.

- 6.1 Tensile Test at Room temperature: As per material Specification (Tensile strength, 0.2% yield strength, %Elongation, %Reduction in Area).
6.2 Hardness Test: As per material Specification.
6.3 Impact Test at -12.2°C: As per Material Specification.
6.4 Additionally, impact test shall be carried out as per NF-2300 at 0°C.
6.5 Product Analysis: Product analysis shall be made on each bar or rod. Product analysis shall be as per table-1 of ASME Sec-IIA –SA540 GrB24Cl5.
6.6 Micro structure: Micro structure & grain size shall be reported and photograph shall be included in TC.

All mechanical and metallurgical test shall be carried out in accordance with requirements of SA540 GrB24 Cl5 and ASME Sec-III NF -2200.

7.0 Machining

- 7.1 Supplier shall indicate the manufacturing route in bid.

8.0 Non- Destructive Test:

For Non Destructive Examination, refer **Annexure-1 of TDCAT:10 Rev 00**

9.0 Dimensional Checks & Visual Examination

All dimensions shall be as per PO/Drawing. Dimensional Tolerance shall be as per P.O/drawing. Visual Examination shall be performed as per ASME sec III-NF2582.



10.0 Repairs and Finish

Repairs by welding are prohibited. Mechanical removal of defects is permitted subject to availability of min. thickness & smooth surface. All non-conformities shall be recorded and reported to Purchaser to determine their disposal. Final disposal will be based on NPCIL's decision.

11.0 Marking

Marking shall be done as per SA540/540M & SA962/962M. Specification, grade, Melt number, Size, Sl. number, Maker's emblem/code, etc are to be stamped.

12.0 Documentation

12.1 Procedures and Plans

Supplier has to submit following documents for review & approval from BHEL & NPCIL after awarding the contract. No manufacturing activity shall start unless written approval of following Procedure and Plans are obtained.

- a) QAP – Indicating sequence of operations & testing, characteristics, acceptance, Quantum of check, witness, hold points etc.
- b) Manufacturing Process Plan.
- c) Heat Treatment Plan.
- d) Material Sampling and Testing Plan (MSTP).
- e) NDE Procedures, NDE Technique sheets & NDE Report formats.

12.2 Reports

Test certificate shall contain

- a) Chemical analysis (Ladle & Product)
- b) Mechanical & Metallurgical tests.
- c) Non-destructive examination.
- d) Supply condition.
- e) Visual and dimensional inspection report.
- f) Heat Treatment Report

13.0 Packing and Shipment

Before shipment, suitable easily removable rust preventive coating shall be applied on the entire surface of the product. Also packing must be suitable for tropical storage for two years.

14.0 Quality Surveillance

14.1 Material shall be subjected to quality surveillance.

14.2 Access to supplier works at all reasonable times for QA surveillance (by BHEL & NPCIL/Inspection agency) shall be provided by Supplier.

14.3 Purchaser/Inspection agency will witness tests at various stages as identified in QAP. Notification shall be given at least fortnight in advance before commencement of stage: HT, UT, Mechanical Test, Test coupon & Specimen Identification, Visual, Dimension & Marking, Cleanliness before packing, Packing for shipment.

14.4 Material shall not be shipped until shipping release is given by Purchaser/Inspection agency.

**Document No.: Annexure-1(NDE Requirements) of TDCAT:10 Rev 00**

1.0 NON DESTRUCTIVE EXAMINATION(NDE): Non-destructive examination shall be performed with a detailed written qualified (for all essential variables of ASME Section-V & Section III NF) procedure, which shall, as a minimum contain the requirements of this specification (TDC, PC-M-965 & PC-M-979). & ASME Section-V, item specific scan plan/technique sheets/instruction sheets, demonstration records (for all essential variables), reporting format, equipment calibration, personnel qualification/certification details, consumable details, extent of coverage, drawing & dimensional records of the reference/calibration/specimens/standards, retention & control of standard specimen/blocks.

Supplier shall prepare the above specific documents pertaining to the items mentioned under this TDC and obtain the purchaser's approval prior to the commencement of manufacturing. NDE shall be performed by using approved Procedures only (approved by BHEL & NPCIL). Personnel shall be qualified as per IS 13805/ISO 9712-3/ SNT-TC-1A.

A detailed report of the examinations shall be made. The report shall include above records and records indicated in T-590/T-690/T-790 of Article 5/6/7 ASME Section V. Other general requirements shall be as per ASME Section V. A sample report format in line with the above requirement shall be attached with the procedure for approval.

Following Non-destructive examination shall be carried out after final heat treatment and machining:

- 1.1 Magnetic Particle Examination:** Magnetic Particle Examination shall be done on bolting material with nominal size $\geq 50\text{mm}$ as per ASME Sec III NF 2583. Extent of examination shall be 100%. Demagnetisation to a residual magnetism < 2 oersted is required after test. Any linear non axial indications shall be considered unacceptable.
- 1.2 Liquid Penetrant Examination:** Wherever MT is not feasible (to be proven practically) due to component shape/geometry/profile in that case final machined surface shall be subjected to Penetrant Test as per ASME Sec III NF 2583. Also, When Magnetic Particle Examination does not yield meaningful results, LPE (Liquid Penetrant Examination) in accordance with ASME sec-III NF 2583 shall be carried out as per approved procedure.
- 1.3 Ultrasonic Examination:** Ultrasonic examination shall be in accordance with SA-388. Examination of forged/rolled bars/rods must be performed from both frontal faces and from the cylindrical surface with normal beam probes.

If evaluation by normal beam probes on the frontal faces are not feasible, the bars/rods shall be examined from the cylindrical surface in to and fro directions by angle beam.

For bars larger than 120 mm in diameter, additional scanning in the circumferential directions (clockwise and counter clockwise) with 35-degree angle beam probes shall be carried out.

The acceptance standards for ultrasonic examination for bars shall be as follows:

Local Indications:

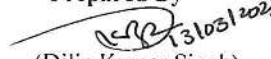
- a) $D < 60\text{ mm}$, CRR-2 mm,
- b) $D > 60\text{ mm}$, CRR- 3 mm,
- c) $D > 120\text{ mm}$, CRR- 4 mm

Where, CRR= Circular reference reflector & D=Diameter of Rod/Bar after final machining at the UT stage in bar/rod condition. UT qualified rods as per CRR requirements mentioned in (c) above shall be used for making the Hanger Rod, Hex. Nut & Lock Nut for SG Vertical Support Assembly.

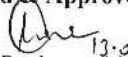
Indications with linear character are not acceptable. Also accumulation of defect indications in close vicinity is not acceptable.

Apart from above, back wall echo in straight beam to be also monitored. Any discontinuity that causes an indication in excess of 20% of the height of the first back reflection or any discontinuity which prevents the production of a first back reflection of 50% of the calibration amplitude is not acceptable.

Prepared By


(Dilip Kumar Singh)
Deputy Manager/NDTL Quality

Reviewed & Approved By


(R Raghavendran)
Manager/NDTL Quality