Tender No. F/F219/25/3491/K1

BHARAT HEAVY ELECTRICALS LIMITED
HEEP HARIDWAR INDIA-PIN 249403
FAX NO: 0091 1334 226462/223948
PHONE NO: 0091 1334 284144

Sub: Requirement of Forgings

The Heavy Electricals Equipment Plant (HEEP) located in Haridwar, India is one of the major manufacturing plants of Bharat Heavy Electricals Ltd. The core business of HEEP includes design and manufacture of large steam turbines, turbo generators and so on.

Bids are invited for following items through GeM Portal- https://gem.gov.in

Item Description	Material Code	Drawing No.	Qty. (No)	Delivery Requirement	Delivery period (Days from PO date)
FORGING FOR LP JOINT PLANE U/H ROUGH MACHINED MATERIAL AS PER SPEC: AA19341 REV: 08, DRG: 41074250997 REV: 01	W95310742077	41074250997 Rev 01	Lot 1- 4 No. Lot 2- 4 No. Lot 3- 4 No. Lot 4- 4 No.	Lot 1-30/09/2026 Lot 2-30/11/2026 Lot 3-28/02/2027 Lot 4-30/04/2027	Lot 1-90 Days Lot 2-150 Days Lot 3-240 Days Lot 4-300 Days
FORGING FOR LP JOINT PLANE L/H ROUGH MACHINED MATERIAL AS PER SPEC: AA19341 REV: 08, DRG: 41074250998 REV: 01	W95310742085	41074250998 Rev 01	Lot 1- 4 No. Lot 2- 4 No. Lot 3- 4 No. Lot 4- 4 No.	Lot 1-30/09/2026 Lot 2-30/11/2026 Lot 3-28/02/2027 Lot 4-30/04/2027	Lot 1-90 Days Lot 2-150 Days Lot 3-240 Days Lot 4-300 Days
FORGING FOR JOINT FLANGE AS PER DRAWING 31074231999 & BHEL SPEC HW10178 Rev 00, DRG: 31074231999 REV:00	W95310742069	31074231999 Rev 00	Lot 1- 4 Nos.	Lot 1-30/10/2026	Lot 1-120 days

Remarks-

1. Delivery period mentioned in enquiry is indicative, bidders to quote their best possible delivery.
2. Item to be supplied as per drawing & Specification/Testing standard (drawings, standard & Specification attached).
3. **Breach of Contract**:
   In case of breach of contract, wherever the value of security instruments like performance bank guarantee available with BHEL against the said contract is at least 10% of the contract value, the same be encashed. In case the value of the security instruments available is less than 10% of the contract value, the balance amount be recovered from other financial remedies (i.e. available bills of the contractor, retention amount, etc. with BHEL) or legal remedies be pursued. The balance scope shall be got done independently without Risk & Cost of the failed supplier/ contractor. Further, levy of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per

provisions of the contract. Accordingly, recovery of an amount equivalent to 10% of the contract value may be made in case of breach of contract.

4. Payment terms shall be as follows:

The payment shall be made within no. of days as defined in the below table from appointed day:

Type of Bidder	Payment Terms (Number of days)
Micro & Small Enterprises (MSEs)	45 days
Medium Enterprises	60 days
Non MSME	90 days

Appointed day means

- The day of *material entry in HEEP (i.e. CISF Stamp date),* subject to submission of non-discrepant documents by vendor as per Purchase Order.

  Or

- Where there is any objection regarding acceptance of goods, the same shall be informed to supplier within fifteen days from the day of the delivery of good. Appointed day will be the day on which such objection is removed by the supplier.
- For BOIs, the appointed day means the date of receipt of material at respective project Site (i.e. MRC date).

Payment shall be made within 45/ 60/ 90 days (as applicable for MSE, Medium and Non-MSME bidders respectively) from the material entry date in BHEL, subject to submission of non-discrepant documents by the vendor, uploading of all documents on BHEL's SUVIDHA portal at the time of dispatch, and the acceptance of material by BHEL after receipt.

Note: This is in supersession of 10 days' time as provided in Clause 12 of GeM GTC and also 45 days from CRAC as provided in the standard format of GeM Bid under Payment Timelines.

Note: Benefits of MSE (Price preference, Payment preference etc.) will be given only to those MSE Vendors who are manufacturers of offered items against the NIT. No MSE benefits shall be provided to Agents / Stockists / Dealers / Traders etc. for the items offered but not manufactured by themselves

5. Vendor should raise inspection call for BHEL / TPI inspection at least 4 days in advance to the planned date of inspection. If customer inspection is envisaged at vendor's works, vendor should give inspection call at least 7 days in advance to the planned date of inspection.

6. 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 19.07.2024 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT, but before opening of Part-II bids against this NIT.

7. Test certificate and Guarantee certificate are required.

8. Rest terms and conditions shall be as per latest GeM GTC/ Buyer added bid specific ATC.

9. The bids received from same IP address shall be outrightly rejected and shall not be considered for further evaluation.

10. If a re-visit of BHEL appointed TPIA is required at vendor's works due to:

(a) Complete material not being offered during inspection (whilst physical visit of Inspection Engineer at Supplier's work) with respect to offered quantity mentioned in raised inspection call.

(b) Lapses on account of supplier has led to rejection of offered material (as per approved QAP/Technical specification/other pertinent requirement while carrying out inspection) Additional visit charges to be paid by BHEL to TPIAs shall be deducted from supplier's bills as penalty.

11. No deviation Certificate to be submitted as attached. Any deviation w.r.t. the tender (technical or commercial) must be explicitly mentioned along with the offer.

12. ***"****For* ***goods / works / services on Indian Suppliers / Contractors:*** *Irrespective of the value of the invoice amount, the supplier/ contractor should necessarily upload the invoice details on BHEL SUVIDHA portal at https://suvidha.bhel.in/suvidha/, prior to despatch/raising invoice. All documents as per contract checklist, along with additional documents (if any), must be uploaded on the portal. It is mandatory that tax invoices with a net amount (including taxes) exceeding Rs five lakhs uploaded on the portal are digitally signed using a Class 3 Digital Signature Certificate (DSC) issued by a licensed Certifying Authority. Submission of invoice document in hard copy is allowed for invoices with a net amount (including taxes) equal to and upto Rs five lakhs in case the requirement for digitally signed invoice is not explicitly mentioned in the contract checklist.*

The Invoice will not be accepted in absence of the above."

13. Declaration by bidder regarding Conflict of interest

The bidder notes that a conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations:

i) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of BHEL directly or indirectly;

ii) The bidder (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating;

iii) Procurement of goods directly from the manufacturers/ suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from both the manufacturer/ supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorized distributor (with/ or without the OEM) from quoting equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.

iv) A bidder participates in more than one bid in this tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as a partner/ JV member or sub-contractor in another bid or vice-versa) in more than one bid shall result in the

disqualification of all bids in which he is a party. However, this does not limit the participation of an entity as a sub-contractor in more than one bid if he is not bidding independently in his own name or as a member of a JV.

The Bidder declares that they have read and understood the above aspects, and the bidder confirms that such conflict of interest does not exist and undertakes that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s), in this regard. 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, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/ guidelines.

Signature with stamp
Name of Authorized Person:
Designation:
Name of Firm:
Date:

Pre- Qualification Requirements

<table>
<tr><th>PQR Clause</th><th colspan="2">PQR</th><th>Vendor's response</th></tr>
<tr><td>1</td><td colspan="2">Experience Requirement
Vendor must have experience of manufacturing and supplying forgings of carbon steel or alloy steel grades in heat treated condition. Vendor must have manufactured and supplied at least 1 forging in above material grade in last 7 years as on date of issue of enquiry.
In support of above, the vendor has to furnish details of forgings supplies in the following format.
<table>
<tr><th rowspan="2">PO number</th><th rowspan="2">Material Grade</th><th colspan="3">Dimension (in mm)</th><th rowspan="2">Date of Supply</th></tr>
<tr><th>OD</th><th>ID</th><th>Height</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>
In support of experience, vendor to submit following document for at least one forging from the above table:
- Copy of purchase order and its correlated test certificates (duly signed by Third party inspection agency / Customer). Test certificates shall cover chemical composition, heat treatment, mechanical properties, dimensional report, non-destructive test report etc.
- Invoice / dispatch document.</td><td></td></tr>
<tr><td>2</td><td colspan="2">Manufacturing & Testing facility</td><td></td></tr>
<tr><td></td><td>a</td><td>Vendor should have in-house forging and heat treatment facility to manufacture forgings of above material grade and enquiry drawing dimension. Outsourcing of forging and heat treatment is not acceptable. Vendor to confirm.
Details of in-house manufacturing facilities for forging and heat treatment are to be submitted with offer.</td><td></td></tr>
<tr><td></td><td>b</td><td><u>Raw material source:</u>
Vendor to submit confirmation and details as per Option 1 or Option 2, as applicable:
<u>Option 1:</u>
Raw material for forging shall be sourced from BHEL approved source listed below. Vendor to confirm (tick mark applicable).
<table>
<tr><td>CFFP BHEL</td><td>☐</td><td>Mahindra Sanyo</td><td>☐</td><td>Arcvac</td><td>☐</td><td>MIDHANI</td><td>☐</td><td>Skyway Steel</td><td>☐</td><td>Laxcon</td><td>☐</td><td>Goradia</td><td>☐</td><td>RMG Alloy</td><td>☐</td></tr>
<tr><td>Saarloha Special</td><td>☐</td><td>Starwire India</td><td>☐</td><td>SAIL</td><td>☐</td><td>Jailaxmi Casting</td><td>☐</td><td>Parbhat Heavy</td><td>☐</td><td>Sunflag Iron</td><td>☐</td><td>ISMT</td><td>☐</td><td>Saurabh Metal</td><td>☐</td></tr>
<tr><td>Quality Steel</td><td>☐</td><td>Mahendra Sponge</td><td>☐</td><td>RINL</td><td>☐</td><td>Sunflag Iron</td><td>☐</td><td>Arora Iron</td><td>☐</td><td>Welspun Speciality</td><td>☐</td><td>KISCO</td><td>☐</td><td>Chaudhry Steel</td><td>☐</td></tr>
</table>
<u>Option 2:</u>
Raw material from other than above listed vendor can also be considered with following condition:
- Vendor to submit details of their source for carbon steel with details of their steel melting and refining facility.
- At least one mill test certificate of ingot/billet/bloom of carbon steel supplied by this source.</td><td></td></tr>
<tr><td></td><td>c</td><td>Vendor to confirm that they have all testing facility (in-house / outsourced) to carry out testing as per enquiry drawing and specification. In case of outsourcing of any test, vendor to agree for testing at NABL accredited labs only.</td><td></td></tr>
</table>

SDGM/MTE

Digitally signed by Ashish Ranjan
Date: 2026.01.20 16:44:10 +05'30'

Digitally signed by Subodh Rana
DN: cn=Subodh Rana, o=BHEL, ou=HEEP Haridwar, email=subodh.rana@bhel.in, c=IN
Date: 2026.01.20 16:53:09 +05'30'

Dy. Mgr/MTE

Quality Requirements)

Sl. No.	Quality Requirement	Vendor's confirmation (Y/N)
1	Pre-dispatch Inspection by BHEL TPIA QUEST as per BHEL approved Quality Plan (QA/CF/QP/319 REV 01).	
2	VENDOR TO ACCEPT AND ENDORSE BHEL QP (NO: QA/CF/QP/319 REV 01).	

Signature with stamp
Name:
Name of Firm:
Designation:
Date:

(Quality Plan)

To be signed & Stamped by bidder

MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN			TO BE FILLED BY BHEL	TO BE FILLED BY BHEL
BHEL	VENDOR'S NAME	ITEM	CARBON STEEL FORGING	QP NO.	QA/CF/QP/319		
				REV	01		
		DRG. NO.	AS PER PO				
		SPEC.	AS PER PO				
		REV			Page 1 of 1		

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	D	AGENCY M	AGENCY B	AGENCY N	REMARKS
1	2	3	4	5	6	7	8	9		10			11
1.	MELTING	CHEMICAL COMPOSITION	CRITICAL	CHEMICAL	100%	BHEL SPEC.	BHEL SPEC.	TC		P	V		RAW MATERIAL SHALL BE PROCURED FROM BHEL APPROVE D SOURCES ALONG WITH TEST CERTIFICATE
2.	FORGING	FORGING STEPS	MAJOR	VISUAL	100%	INTERNAL TECHNOLOGY	INTERNAL TECHNOLOGY			P	V		
3.	QUALITY HEAT TREATMENT	TIME TEMP CONTROL	MAJOR	MEASURE	100%	BHEL SPEC	BHEL SPEC	TC		P	V		
4.	TEST PIECE IDENTIFICATION	STAMPING	MAJOR	VISUAL	BHEL SPEC	BHEL SPEC. & DRG.	BHEL SPEC & DRG.			P	W		
5.	MECHANICAL TESTING	MECHANICAL PROPERTIES	MAJOR	MECHANICAL	PER HEAT PER HT BATCH	BHEL SPEC.	BHEL SPEC.	TC		P	W		
6.	CHEMICAL TESTING	CHEMICAL COMPOSITION	MAJOR	CHEMICAL		BHEL SPEC.	BHEL SPEC.	TC		P	V		
7.	UT	ULTRASONIC TEST	MAJOR	UT	100%	BHEL SPEC.	BHEL SPEC.	TC		P	W		
8.	ANY OTHER TEST IF CALLED IN DRG. INCLUDING IBR CERTIFICATE	AS PER DRAWING	MAJOR	AS PER DRG.	100%	BHEL SPEC.& DRG.	BHEL SPEC.& DRG.	TC		P	W		
9.	MACHINING	DIMENSIONS	MAJOR	MEASURE	100%	DRAWING	DRAWING	TC		P	W		
10.	MARKING PRESERVATION & PACKING	MARKING PRESERVATION & PACKING	MAJOR	VISUAL	100%	BHEL DRAWING & SPEC	BHEL DRAWING & SPEC			P	V		

MANUFACTURER/SUBCONTRACTOR	Digitally signed by INDRA BHUSHAN KUMAR Date: 2020.11.18 11:40:10 +05'30'	LEGEND: ! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER	FOR CUSTOMER USE	APPROVED BY

(Specification/Standards/Drawings)

Spec: AA19341 Rev:08,
HW10178 Rev:00
Standard: AA0850118 Rev 01
Drawing: 41074250997 Rev 01
Drawing: 41074250998 Rev 01
Drawing: 31074231999 Rev 00

BHEL	CORPORATE PURCHASE SPECIFICATION	AA 193 41
		Rev. No. 08
		PREFACE SHEET

1.5% MANGANESE STEEL FORGINGS – (Gr: 20C15)

FOR INTERNAL USE ONLY
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Comparable Standards:

Suggested/Probable Suppliers and Grades:

Refer plant vendors list.

User Plant References:

1. HEEP, HARDWAR : --
2. HYDERABAD : CSN 411523
3. BHOPAL : --

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Revisions : Cl: 31.713 of MOM of FCF+HTM			APPROVED : INTERPLANT MATERIAL RATIONALISATION COMMITTEE-MRC (FCF+HTM)		
Rev. No. 08	Amd.No.	Reaffirmed	Prepared HEEP HARDWAR	Issued Corp. R&D	Dt. of 1st Issue MARCH, 1978
Dt.:22.11.2011	Dt :	Year :			

	CORPORATE PURCHASE SPECIFICATION	AA 193 41
		Rev. No. 08
		PAGE 1 OF 6

1.5% MANGANESE STEEL FORGINGS – (Gr:20C15)

1.0 GENERAL:

This specification governs the quality requirements of 1.5% Manganese Steel Forgings, Material Grade 20C15.

2.0 APPLICATION:

Suitable for components requiring high strength and weldability.

3.0 CONDITION OF DELIVERY:

Forgings shall be suitably heat treated to achieve mechanical properties as specified in clause 12.0 of this specification.

Rough machining of the forgings shall be carried out, unless otherwise specified on BHEL order/drawing.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

There is no national standard covering this material and mechanical properties.

5.0 DIMENSIONS AND TOLERANCES:

The dimensions and tolerances shall be äs specified in BHEL order/drawing. Wherever these are not specified, the machining allowances and tolerances shall be as specified below.

For finish machined drawings : 3 ± 1 mm
For rough machined drawings : ± 1 mm

6.0 MANUFACTURE:

Forgings shall be manufactured from steel produced by the open hearth, electric or such other process as may be agreed to between BHEL and the manufacturer. Steel shall be fully killed.

Sufficient discard shall be made from each ingot to ensure freedom from pipe, segregation and other defects.

The amount of hot working and finishing temperature shall be such as to ensure complete soundness and adequate uniformity of structure and mechanical properties after heat treatment. The forgings shall not be over heated.

The minimum reduction ratio when forgings are made out of ingots shall be 4:1.

For sizes above 250mm ruling section the minimum reduction ratio shall be 3.5 : 1

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Rev. No. 08	Amd.No.	Reaffirmed	Prepared HEEP HARDWAR	Issued Corp. R&D	Dt. of 1st Issue MARCH, 1978
Dt. 22.11.2011	Dt :	Year :			

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Note: **Raw material like Ingots/Blooms/Billets required for forgings should be procured from BHEL approved sources along with test certificate."**

7.0 HEAT TREATMENT:

Forgings shall be suitably heat treated to achieve mechanical properties as specified in clause 12.0. Test pieces shall also be heat treated along with the forgings they represent.

8.0 FINISH:

As mentioned in the drawing.

9.0 FREEDOM FROM DEFECTS;

Forgings shall be free from defects such as cracks, flakes, seams, segregation, harmful non-metallic inclusions and other defects which may affect the utility of the forgings.

10.0 CHEMICAL COMPOSITION:

The melt analysis of steel and permissible variation in the composition of the forgings from the melt analysis shall be as specified below:

Element	Melt analysis, percent		Permissible variation, percent.
	min.	max	
Carbon	0.16	0.24	± 0.02
Silicon	0.10	0.35	± 0.03
Manganese	1.30	1.70	± 0.05
Sulphur	--	0.035	+ 0.005
Phosphorus	--	0.035	+ 0.005

Note:

1) Elements not quoted above shall not be added to the steel, other than for the purpose of finishing the heat and shall not exceed the following limits:

Element	Percent, max.
Nickel	0.30
Chromium	0.30
Copper	0.25
Molybdenum	0.15
Vanadium	0.05
Tin	0.05

2) Carbon equivalent (melt analysis) value : C.E. = 0.48%, max.

$$C.E. = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

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11.0 TEST SAMPLES:

11.1 Unless otherwise specified in the order/drawing, test samples shall be taken from each melt and each heat treatment batch. Test samples should be cut from the heat treated forgings by cold process only and shall receive no further heat treatment.

Test samples shall be taken from locations indicated on the drawing, leaving enough material, if required, for testing at BHEL's end, integral with the forging.

Test samples shall be cylindrical or rectangular in shape and cut at a distance of 12.5 mm below the heat treated surface.

11.2 When integral test pieces are not called for, a test sample equivalent to the ruling section or 65 mm diameter, whichever is less and 610 mm long, having similar reduction ratio and heat treatment, as the forgings it represents shall be provided per heat, per heat treatment batch for check testing at BHEL along with the forgings. The sample shall be properly identified and correlated with the heat/heat treatment Batch No/Test certificate No. Test samples shall be taken at a distance of 12.5 mm below the heat treated surface.

11.3 Test samples shall generally be taken in the longitudinal direction. However, for economic reasons or where the size/configuration does not permit the same. Test samples may be taken in the transverse or radial direction. The test sample orientation shall be mentioned in the test certificate.

12.0 MECHANICAL PROPERTIES:

The test pieces, after being heat treated as per clause 7.0 above, shall show the following properties upto a limiting section of 800mm. Properties for thicker sections shall be subject to agreement between BHEL and the mainufacturer. Test methods are specified below:

12.1 Tensile test : As per IS:1608

12.2 Hardness test (Brinell) : As per IS:1500

12.3 Charpy Impact Value (2mm U-Notch) : As per IS :1499

This test applicable for forgings of sizes above 16mm only.

Property	Sample (See cl.11.3)	Limiting ruiing section, mm	
		Upto & incl.400	> 400 & upto 800
Tensile strength N/mm^2	Longitudinal/ Transverse/ Radial/Tangential	510	490

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CORPORATE PURCHASE SPECIFICATION

Yield strength min, N/mm^2	Longitudinal/ Transverse/ Radial/Tangential	295	275
Elongation on 5.65 √So gauge length percent, min	Longitudinal Transverse Radial Tangential	17 9 11 13	15 7 9 11
*Hardness, Brinell,HB	—	143 -197	143 - 197
Charpy Impact Value (2mm, U-Notch) min.,Joules	Longitudinal Transverse Radial Tangential	31 16 19 24	25 13 16 20

*** Note:** Hardness test can be conducted only, when tensile test can not be performed.

13.0 ULTRASONIC TEST:

Each forging shall be tested ultrasonically in accordance with BHEL standard AA 085 01 18 to ensure freedom frow internal defects. The norms of acceptance shall be as per Category 2 of the above standard.

14.0 ADDITIONAL TESTS:

If specified in the drawing/order, the following tests shall be conducted:

i) Magnetic particie test.
ii) Any other tests.

Norms and acceptance shall be as specified in the drawing/order.

15.0 SCOPE OF THIRD PARTY INSPECTION:

Wherever, separate quality plan is not attached, the scope of third party inspection shall be as follows:

1. Review of supplier's declared chemical composition.
2. Selection of test samples for mechanical tests and witness of mechanical tests.
3. Witness of Non-destructive tests as applicable.
4. Review of HT charts.
5. Dimensional inspection.

16.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied unless otherwise stated in the order, preferably in the test certificate format annexed to this specification (Annexure-1).

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In addition, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following Information.

Dimensional Inspection.
Details of heat treatment.
Reduction ratio
Chemical composition including trace elements.
Results of mechanical tests.
Results of ultrasonic test.
Results of additional tests called for in the order/drawing.

17.0 PACKING AND MARKING:

Forgings shall be suitably packed to prevent corrosion and damage during transit. Machined surfaces shall be properly protected with anti-corrosive compounds. Each package or forging (when supplied separately) shall be legibly marked with the following Information:

AA 19341 : 1.5% Manganese Steel Forgings, Material Grade.:20C15
BHEL Order No.
Consignment/Identification No.
Weight.
Batch No.
Supplier/s name

18.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1. AA 085 01 18 2. IS: 1499 3. IS: 1500 4 IS: 1608

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AA 193 41	CORPORATE PURCHASE SPECIFICATION	बी एच ई एल BHEL
Rev. No. 08		
PAGE 6 OF 6		

ANNEXURE - 1: RECOMMENDED TEST CERTIFICATE FORMAT FOR FORGINGS

SUPPLIER'S NAME AND ADDRESS

TEST CERTIFICATE FOR FORGINGS

1. Customer:
2. TC No. & Date:
3. PO No.:
4. Process of Melting Ingot:
5. Deoxidisation Process:
6. Forging Method:
7. BHEL's Reference for Approval of Bloom
8. Discard: Top_____%; Bottom_____%
9. Reduction Ratio } Ingot to Bloom / Bloom to Blank
10. Batch No.:
11. Heat/Melt No:
12. Spec.No.
13. Test Bar Size & Nos.
14. Supplier of the ingot/billet/ Bloom and TC reference.

15. FORGINGS COVERED BY TEST CERTIFICATE

S.No.	Drawing No. & Item No.	Description	Quantity & Weight

16. CHEMICAL COMPOSITION (PERCENT)

Element		C	Si	Mn	S	P										
As Per Specn.	Min.															
	Max.															
Actual Values																

17. HEAT TREATMENT
(To be accompanied by Recorder Chart, Whenever called for)

Condition	Heating Rate, °C/hr.	Temp. °C	Soaking Time, Hrs.	Cooling Rate, °C/hr	Cooling Medium

18. MECHANICAL PROPERTIES

		T.S. N/mm²	Y.S. 0.5/0.2% Proof N/mm²	% Elongation 5.65√So GL	% R.A. Min.	Hardness BHN(Min.3 values)	Impact Value Joules	Bend Test		
								Angle of bend	Dia of mandrel	Result
As Per Specn.	Min.									
	Max.									
Actual Values										

19. SURFACE FINISH (When called for in the order/drg.)

20. DIMENSIONAL INSPECTION

21. NON-DESTRUCTIVE TESTS

Nature of Test	Acceptance level	Instrument used	Range	Results	Any other detail
Ultrasonic					
Radiographic					
Dye penetrant/ Magnetic Particle					

22. METALLOGRAPHIC EXAMINATION
(To be conducted if called for and photo micrographs to be attached along with a report)

Location of Sample	Etchant used	Magnification	Constituent observed	Relative %	
Microstructure	Macroetch	Inclusion Rating			

23. OTHER TESTS IF ANY (MICROSCOPIC, SULPHUR PRINTS, ETC)

24. IDENTIFICATION OF FORGINGS AS PER PURCHASE SPEC.

We hereby certify that the items mentioned above have been tested and inspected in our presence and are found to be in accordance with drawings, specifications and purchase order.

SIGNATURE, NAME & SEAL OF THE INSPECTING OFFICER
DATE:

SIGNATURE, NAME & SEAL OF THE CHIEF OF QUALITY CONTROL/ CHIEF METALLURGIST OF THE SUPPLIER
DATE:

INSTRUCTIONS

a) Details of all heat treatment processes carried out should be furnished sequentially in 17.
b) Test certificates are to be furnished as per Purchase order and specification, in A4 size preferably in transparent paper.
c) All the entries including signature should be in black colour ink.
d) If testing is done by outside agencies, the original TCs shall be furnished.
e) The actual TC may run into more than one A4 size paper, if needed, to facilitate filling up of details.

CS-692

दिनांक एवं हस्ताक्षर SIGN & DATE

सामग्री सूची संख्या को अधिक्रमित करना है SUPERSEDES INVENTORY NO

सामग्री

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दिनांक एवं हस्ताक्षर SIGN & DATE

सामग्री सूची संख्या INVENTORY NO.

BHEL

संस्थान क्रय विनिर्देश (हीप : हरिद्वार)

PLANT PURCHASE SPECIFICATION
(HEEP: HARIDWAR)

HW10178

मुख्य पृष्ठ
PREFACE SHEET

PLATE & FLAT PRODUCT OF STEEL GRADE P355GH

केवल आंतरिक प्रयोग हेतु
प्रदायक को देने से पूर्व इस मुख्य पृष्ठ को निकाल दें ।
FOR INTERNAL USE ONLY
REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS.

समतुल्य मानक / सूची आदि
COMPARABLE STANDARDS / CATALOGUES ETC. : **NIL**

सुझाए / सम्भावित प्रदायक एवं श्रेणी
SUGGESTED / PROBABLE SUPPLIERS AND GRADES. : **AS PER PMD**

कोई अन्य जानकारी
ANY OTHER INFORMATION :

REAFFIRMED YEAR 2026			स्वीकृति APPROVED : संस्थान मानकीकरण समिति PLANT STANDARDIZATION COMMITTEE		Gr. No. 2.60
REV.NO.	00		निर्माण PREPARED : MTE	ज़ारी ISSUED : TSX	दिनांक DATE : 14.08.19
Dt.	14.08.19				

दिनांक एवं हस्ताक्षर SIGN & DATE		संस्थान क्रय विनिर्देश (हीप : हरिद्वार)	HW10178
सामग्री पूर्ण संख्या को अधिक्रमित करता है SUPERSEDES INVENTORY NO. TLV0140		**PLANT PURCHASE SPECIFICATION** **(HEEP: HARIDWAR)**	पृष्ट का Page 1 of 2

PLATE & FLAT PRODUCT OF STEEL GRADE P355GH

1.0 GENERAL:

This material specification governs the quality of pressure purpose plates and flats of steel grade P355GH, material no 1.0473 as per EN10028-2.

2.0 APPLICATION:

The product shall be used for manufacture of turbine and generator components.

3.0 CONDITION OF DELIVERY:

Rolled/forged and normalized.

4.0 DIMENSION AND TOLERANCES:

The product shall be supplied to the dimensions as per purchase order and tolerances as per EN 10029, class C

5.0 MANUFACTURING:

5.1 Steelmaking Process:

Steel shall be fully killed.

5.2 HEAT-TREATMENT:

Plates/flats of thickness above 12 mm shall be supplied in normalized condition. Normalization shall be carried out as per EN10028 -2.

6.0 PROPERTIES:

6.1 Chemical Composition:

Heat analysis in weight % shall be provided.

Chemical composition shall be taken from EN10028-2. Values given below is for information only.

C	Si	Mn	S	P	Al_{total}	N	Cr
0.10 – 0.22	≤ 0.60	1.10 – 1.70	≤ 0.010	≤ 0.025	≥ 0.020	≤ 0.012	≤ 0.30

Cu	Mo	Nb	Ni	Ti	V	Cr+Cu+Mo+Ni
≤ 0.30	≤ 0.08	≤0.040	≤ 0.30	≤0.03	≤0.02	≤ 0.70

6.2 Mechanical Properties:

6.2.1 Selection of test samples:

The samples shall be taken at 1/4 product width (refer EN10028-1, Table 2) for tensile and impact test at room temperature.

The test unit for tensile at room temperature and the impact test shall be carried out on each rolled plate. If a rolled plate is split into several heat treatment batch, each individual heat treatment batch shall be regarded as test unit. The test pieces shall be prepared in accordance with Table 3 of EN10028-1. The tensile test shall be carried out in accordance with ISO 6892-1 and shall be performed in as-delivery condition. Testing shall be done only in one direction.

The impact test shall be carried out in accordance with ISO 148-1 with standard 3 V-notch specimen in as delivery condition. Testing shall be done in only in one direction. Impact test is not required for plates of thickness <12mm. Mechanical properties requirement shall be taken from EN10028-2.

Values given in table below is for information.

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				नाम NAME	दिनांक एवं हस्ताक्षर SIGNATURE & DATE
TSX	D. GANGWAR	27/08/19			
PSC	Girish Sharma		अनुवादक TRANSLATED BY		
QAX	U.K. Panda	29.08.19	निर्माणकर्ता WORKED BY	SUBODH RANA	14.08.19
STE	DINESH GOND	19.08.19	जांचकर्ता CHECKED BY	ASHISH RANJAN	14.8.19
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	GOPAL KRISHNAN	14.8.19

REAFFIRMED YEAR 2026

स्वीकृति संस्थान मानकीकरण समिति
APPROVED : PLANT STANDARDIZATION COMMITTEE

Gr. NO. 2.60

REV.NO.	00	निर्माण PREPARED : MTE	जारी ISSUED : TSX	दिनांक DATE : 14.08.2019
Dt.	14.08.2019			
CHANGE ADVICE NO.	-			

दिनांक एवं हस्ताक्षर SIGN & DATE 29/08/19

सामग्री पूर्ण संख्या INVENTORY NO. P.4141

C/A NO: TSX (MTE) - 26 - 05

Thickness(t) (mm)	Yield strength (N/mm^2)	Tensile strength (N/mm^2)	Elongation L=5d (%)	Impact Energy J *(20^oC)
$t \leq 16$	≥ 355	510 - 650	≥ 20	≥ 40
$16 < t \leq 40$	≥ 345			
$40 < t \leq 60$	≥ 335			
$60 < t \leq 100$	≥ 315	490 - 630		
$100 < t \leq 150$	≥ 295	480 - 630		
$150 < t \leq 250$	≥ 280	470 - 630		

* Average of 3 Charpy V notch specimens, Minimum value ≥ 70% specified value.

7.0 OUTER AND INNER QUALITY / NON DESTRUCTIVE TESTING:

7.1 SURFACE CONDITION:

As per EN 10163-2, class B. Repair welding is not permitted. Visual inspection must be performed on every product.

7.2 SCOPE OF INSPECTION:

Following NDE shall be performed in delivery condition:

- Verification inspection of all plates
- UT inspection shall be according to EN10160. The criteria for registration and decision of quality class S1 according to EN 10160 (table 3) shall be applied and fulfilled; where 10 clusters of heterogeneities in the square of 1m x 1m with the highest density are the maximum acceptable number.

8.0 TEST CERTIFICATES:

The supplier shall supply four copies of test certificates as per EN 10204, certificate 3.1 B, unless otherwise stated on the order. The test certificates shall bear the following:

- BHEL References:
- Specification number, Purchase order no.
- Suppliers references: Name, emblem, material designation, melt no., heat treatment batch no.

Results of testing

- Melting process, melt analysis
- Details of Heat-treatment performed
- Mechanical and impact test results
- U.T. Results
- Dimensional and visual inspection
- Confirmation of the verification inspection,

9.0 MARKING:

The marking of the materials shall be such that heat no., steel grade/specification & manufacturer name / identifications are legible.

10.0 CLEARANCE FOR DELIVERY:

The total results of the tests carried out are the deciding factor for clearance for delivery. BHEL shall evaluate the total results taking into consideration the intended use of the material and examines accordingly the permissibility of deviation (if any) from the specified properties.

The clearance however does not relieve the supplier of his responsibility for the hidden non-permissible defects, which are found later.

11.0 FREEDOM FROM DEFECTS:

Plate/flats shall be free from defects such as cracks, flacks, seams, segregation, inclusion and other defects which may affect utility of the plates.

12.0 CROSS REFERRED STANDARDS: EN 10028, EN 10029, EN 10160, ISO 6892-1, ISO 148-1, EN 10163, EN 10204

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REV. NO. 00		निर्माणकर्ता WORKED BY	S.RANA		14.08.2019
		जांचकर्ता CHECKED BY	A. RANJAN		14.08.2019

दिनांक एवं हस्ताक्षर SIGN & DATE 29/08/19

सामग्री सूची संख्या INVENTORY NO. P-41141

सामग्री सूची संख्या को अधिक्रमित करता है SUPERSEDES INVENTORY NO.

ULTRASONIC TESTING, CLASSIFICATION AND ACCEPTANCE STANDARDS FOR STEEL FORGINGS, BILLETS AND BLOOMS

1.0 SCOPE:

This standard deals with the ultrasonic testing of steel forgings, billets and blooms. The procedure covers pulse echo direct contact manual ultrasonic flaw detection technique. This standard does not apply to austenitic steel forgings for which AA 085 01 19 may be referred to. (01)

2.0 PERSONNEL REQUIREMENT:

Personnel performing non-destructive examination and evaluation shall be qualified to the recommended practice SNT - TC - 1A or any other recognised practice.

3.0 EQUIPMENT CHARACTERISTICS:

3.1 Frequency range:

The ultrasonic equipment shall be suitable for operating at frequencies within the range of 0.5 to 6 MHz.

3.2 Sensitivity:

The sensitivity of the equipment shall be tested to ensure that the number of full screen back wall echo is not less than that given below, when the appropriate probe is placed on the metalised surface of plastic insert of the Indian Standard reference block (IS:4904)/IIW block.

(01)

Frequency ~~range~~, MHz	Min.No. of full screen back echoes
1	5
2	4
4 to 6	2

3.3 Resolution:

The resolution of the equipment and probe combined shall be such as to show separately indications of the three grooves in the IIW - VI block.

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CORPORATE STANDARD

4.0 SURFACE CONDITION:

The test surface shall be free from loose scales, rust and such other extraneous material that would interfere with the ultrasonic energy transmission. In case of machined surface, it is desirable to have a surface finish of 6.25 microns or better. A gramophone record type of finish and tear produced by machining tools shall be avoided since these give rise to spurious echoes and cause probe wear.

5.0 COUPLANT:

To ensure adequate transmission of ultrasonic energy between the probe and the test object, a suitable couplant having good wetting characteristics such as oil, grease or water, ~~glycerine or cellulose paste~~ shall be used. (01)

6.0 TESTING TECHNIQUE:

6.1 Selection of testing technique shall be made after giving due consideration to the method of manufacture and shape of the object tested. Testing technique should be such that each and every part of the object volume is scanned at least once. Successive scans shall overlap a minimum of 15% of the probe width. Uniform contact shall be maintained between probe and object and scanning speed shall not exceed 150 mm/ second. The following techniques are considered to be minimum for providing adequate coverage. (01)

6.2 Scanning Scheme (Solid And Hollow Forgings):
Complete length of the forging shall be scanned radially from sides / cylindrical surface through 360° using longitudinal wave probe. Whenever practicable the forging shall be scanned in axial direction also. Hollow forgings, and when necessary, solid forgings also shall be scanned using appropriate shear wave probes to detect axial and radial cracks. Hollow forgings are the forgings made hollow on the press by punching or ring rolling operation.

6.3 Solid Rectangular Forgings, Billets And Blooms:
Complete length of the object shall be scanned from two adjacent faces and whenever practicable one end face using longitudinal wave probe.

6.4 Radial cracks on round sections which can not be detected by normal testing method may be subjected to other crack detection methods such as MPI.

7.0 SCANNING:

7.1 Probes and Frequency:
Overall scanning shall be done using 2 MHz nominal, 20-25 mm diameter probes except when large grain size and path length make it necessary to use a lower frequency. Smaller probes may be used when necessary. However, for forgings intended for backing material for white metal lined bearings, the examination shall be carried out by 4 MHz probes.

7.2 Time Base Calibration:
The time base shall be calibrated using a calibration block or a known dimension of forging under examination.

7.3 Sensitivity:

7.3.1 When Calibrated Attenuator Is Not Available:

Reference sensitivity of equipment shall be set such that the maximum acceptable defect equivalent flat bottomed hole in the test block is equal to 75% of the full screen height. Testing shall be carried out at the highest sensitivity possible.

7.3.2 When Calibrated Attenuator Is Available:

The sensitivity of the equipment during scanning shall be set 6 dB more than the sensitivity required to give a full screen height echo from the maximum acceptable size of defect.

Note: The above sensitivity level adjustment is purely for scanning purposes. Once a defect is encountered, the sensitivity shall be brought down to estimate the size of defect for evaluation of the material under test.

8.0 **ESTIMATION OF FLAW SIZE:**

8.1 Large Size Flaws:

The size of large flaws can be estimated by moving the probe in all directions and plotting the midpoint of the probe when echo falls to 50 percent or 6 dB.

8.2 Small Size Flaws:

8.2.1 When Calibrated Attenuator Is Not Available:

8.2.1.1 The size of the flaw may be estimated by comparing with the echoes of the flat bottomed holes at appropriate depths in a test block of ultrasonically similar material.

8.2.1.2 The size of the flaw may also be estimated by moving probe successively in all the four directions at right angles to each other and plotting the mid point of the probe when echo height falls to 50% or 6 dB. Due allowance shall also be made for beam spread, depth and orientation of flaw and diameter of the forging if the scanning is done from the curved surface.

8.2.2 When Calibrated Attenuator Is Provided With The Equipment:

The size of the flaw (smaller than the beam spread) can be estimated accurately in millimetres of equivalent circular flaw with the help of Krautkramer's DGS (Distance - gain - size) diagram. Method of estimating flaw size using a DGS diagram is given in Annexure - A.

CORPORATE STANDARD

9.0 CLASSIFICATION OF FORGINGS, BILLETS AND BLOOMS:

9.1 Forgings, billets and blooms are classified into the following five categories depending upon the defect size admissibility for the purpose of ultrasonic testing:

Category	Unacceptable defects
1	(i) Cracks, flakes, seams & laps. (ii) Defects giving indication larger than that from a 2 mm diameter equivalent flaw. (iii) Groups of defects with maximum indication less than that from a 2 mm diameter equivalent flaw which cannot be separated at testing sensitivity if the back echo is reduced to less than 70%. (iv) Defects giving indications of 1 to 2 mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.
2	(i) Cracks, flakes, seams & laps. (ii) Defects giving indication larger than that from a 4 mm diameter equivalent flaw. (iii) Groups of defects with maximum indication less than that from a 4 mm diameter equivalent flaw which cannot be separated at testing sensitivity if the back echo is reduced to less than 50%. (iv) Defects giving indications of 2 to 4 mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.
3	(i) Cracks, flakes, seams & laps. (ii) Defects giving indication larger than that from a 6 mm diameter equivalent flaw. (iii) Groups of defects with maximum indication less than that from a 6 mm diameter equivalent flaw which cannot be separated at testing sensitivity if the back echo is reduced to less than 40%. (iv) Defects giving indications of 3 to 6 mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.
4	(i) Cracks, flakes, seams & laps. (ii) Defects giving indication larger than that from a 10 mm diameter equivalent flaw. (iii) Groups of defects with maximum indication less than that from a 10 mm diameter equivalent flaw which cannot be separated at testing sensitivity if the back echo is reduced to less than 20%.

(iv) Defects giving indications of 5 to 10 mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.

5 (i) Cracks, flakes, seams & laps.
(ii) Defects giving indication larger than that from a 15 mm diameter equivalent flaw.
(iii) Groups of defects with maximum indication less than that from a 15 mm diameter equivalent flaw which cannot be separated at testing sensitivity if the back echo is reduced to less than 10%.

Note: Loss of back wall echo not attributable to the presence of defects or geometry and exceeding the limits mentioned in item (iii) of each category of unacceptable defects shall be a cause for rejection.

ANNEXURE - A

The equivalent flaw size curves of the DGS diagram is prepared by plotting the amplitude in decibels from a series of circular reflectors with increasing distance from the probe in water and so the graph incorporates only the loss in water. When it is found that the attenuation in the material under test is more (this can be checked using back echo curve of DGS diagram), this shall be taken into account while calculating the flaw size. Corrections will not be required for majority of heat treated forgings when tested with 2-4 MHz probes.
A step by step method of estimating flaw size using universal DGS diagram is given below:

(a) Adjust the depth range of the equipment to the required depth.

(b) Adjust the back echo to 70% of screen height from a defect free area parallel wall of the material under test or ultrasonically similar test block and note the dB value (A) on the calibrated gain control.

(c) Mark on the back echo curve of the diagram, the back wall of the distance in terms of near field in millimetres in the case of universal DGS diagram.

(d) Move the probe to the defective area and get the maximum defect echo. Read off the flaw depth. Increase the gain with the calibrated gain control until echo height reaches 70% of screen height. Note the attenuator reading in dB (B).

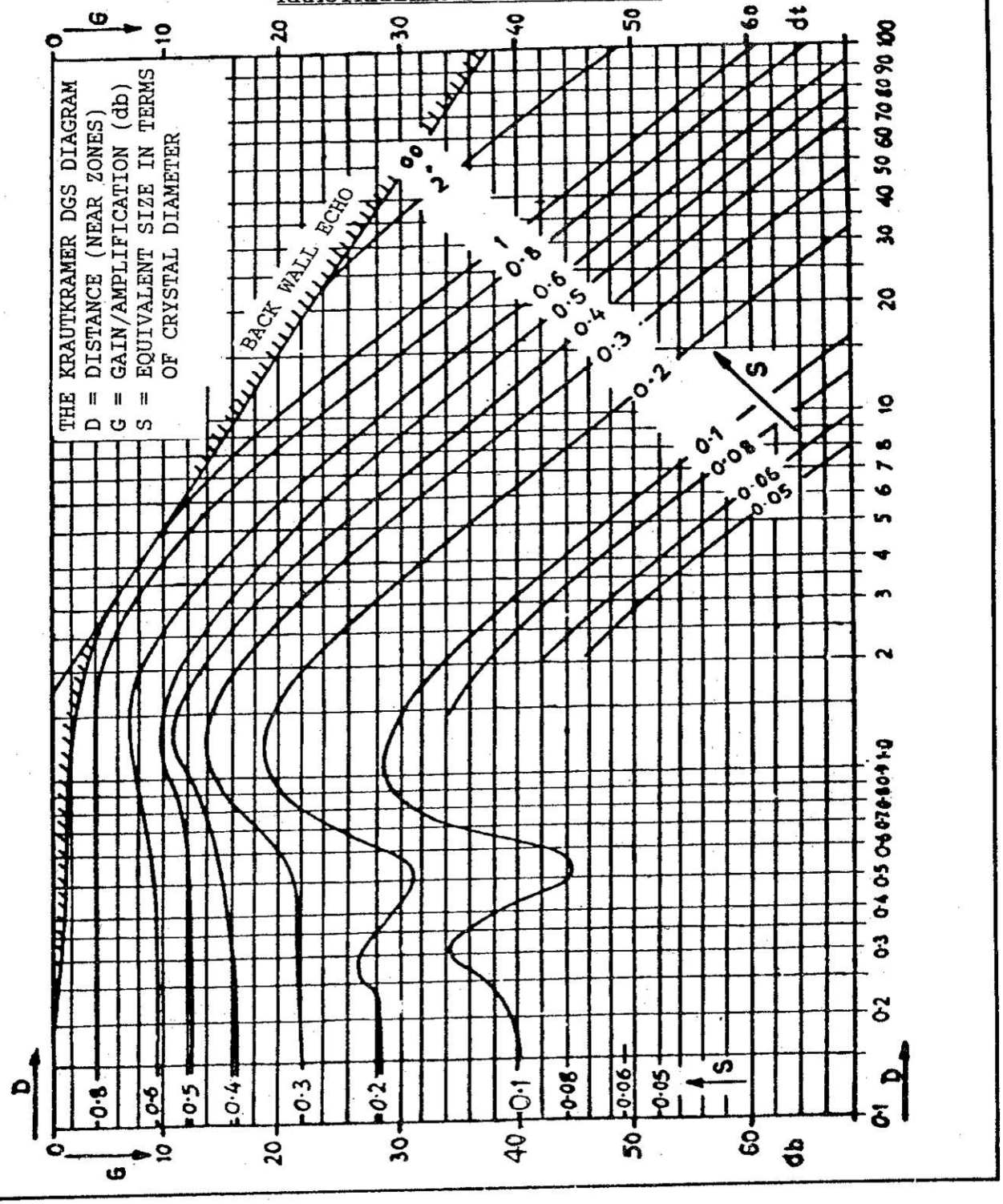
(e) Calculate the gain (G) in dB by subtracting 'A' from 'B'. Count off the gain 'G' downwards from the marked point on the back echo curve, and then move horizontally to intersect the vertical line from the base line corresponding to the flaw depth 'D' in terms of near field in the case of universal diagram.

CORPORATE STANDARD

(f) Note the equivalent flaw size curve passing through the above point. Multiply the reduced flaw dimension (S) of the curve by the probe diameter to give the equivalent flaw size in millimetres.

ANNEXURE - A

KRAUTKRAMER'S DGS DIAGRAM



FIRST ANGLE PROJECTION

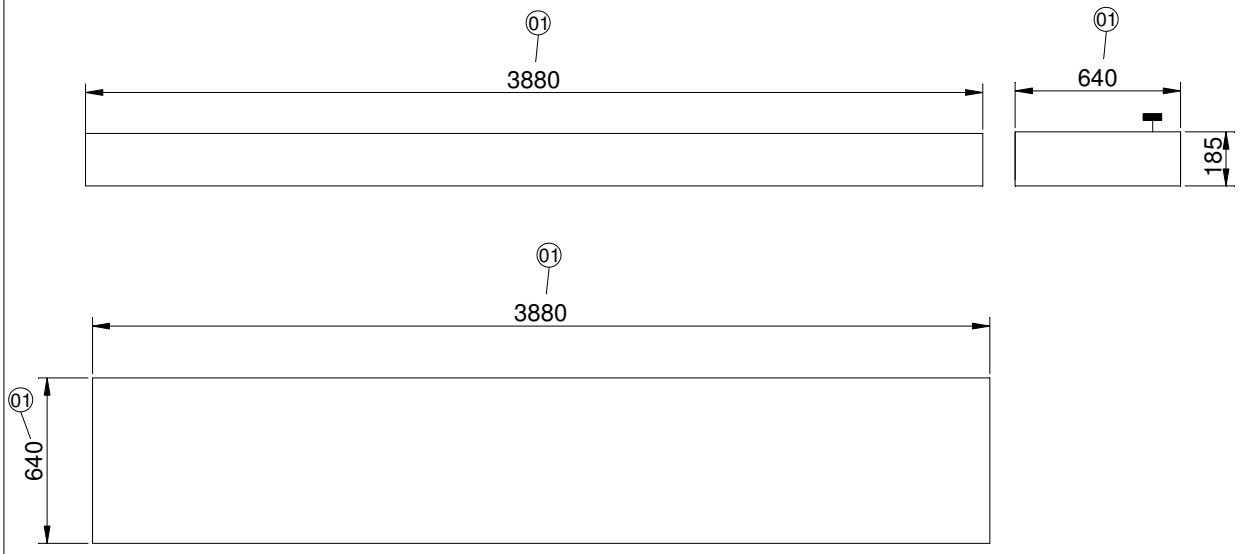
(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

REV	DATE	ALTERED / CHECKED	REV	DATE	ALTERED / CHECKED	~~GMS No.~~ / C.B.O.M.– NO.	STATUS OF DRG
			01	11.08.23		0–10742–50000	U
ZONE			ZONE	DRAWING REVISED AS PER C/A NO: MTE–23–F0042			

AGREED DEPT	NAME	SIGN	DATE
TTX	S.S.ORAON	sd/–	10.02.23
STE WTX	DINESH GOND TANZEEM	sd/–	31.01.23 10.02.23

GRADE OF UNTOL.DIM M/CG. C/M/F –AA0230208 | WELDING A/B/C/D AA0621104 | GAS CUTTING–T3 AA0621101

12.5 ALL OVER EXCEPT OTHERWISE STATED



1. FORGING SHALL BE SUPPLIED IN CONFORMITY WITH THE PURCHASING SPECIFICATION NO. AA19341.
2. FORGING TO BE SUPPLIED IN ROUGH MACHINED CONDITION.
   TOLERANCES ON ALL DIMENSIONS : ±2mm.
3. IDENTIFICATION MARKING SHALL BE DONE AT THE PLACE MARKED ■.

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Ref. Drawing No. 21074250077

W95310742077

AA19341

Sign & Date

BHARAT HEAVY ELECTRICALS LTD.
RANIPUR, HARDWAR

	NAME	SIGN	DATE
DRN	MANOJ	sd/–	31.01.23
CHD	SUBODH RANA	sd/–	31.01.23
APPD	ASHISH RANJAN	sd/–	31.01.23

NO. OF VAR –

Inventory No.

DEPT	STE	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
CODE	4011	NTS	3606 (01)	––––––––		–

TITLE FORGING FOR JOINT PLANE–U/H (R/M)

CARD CODE 7

DRAWING NO. 4–10742–50997 22 23 24

SHEET No. 01 | No. OF SHEETS 01

A4 SIZE

FIRST ANGLE PROJECTION

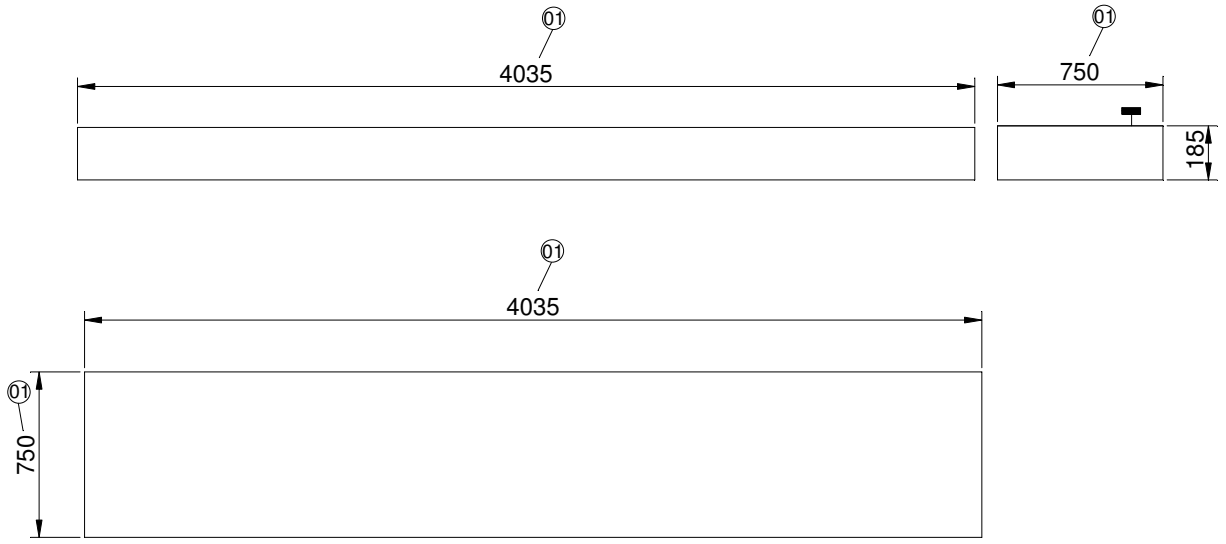
(ALL DIMENSIONS ARE IN mm) FORM DG 39(B)

REV	DATE	ALTERED / CHECKED	REV	DATE	ALTERED RAJPAL / CHECKED SUBODH	~~GMS No.~~ / C.B.O.M.– NO.	STATUS OF DRG
			01	16.08.23		0–10742–50000	U

ZONE		ZONE	CROSS SECTION UPDATED AS PER C/A NO: MTE–23–F0043	AGREED DEPT	NAME	SIGN	DATE
				TTX	S.S.ORAON	sd/–	10.02.23
				STE WTX	DINESH GOND TANZEEM	sd/–	31.01.23 10.02.23

GRADE OF UNTOL.DIM M/CG. C/M/F –AA0230208 | WELDING A/B/C/D AA0621104 | GAS CUTTING–T3 AA0621101

12.5 ALL OVER EXCEPT OTHERWISE STATED



1. FORGING SHALL BE SUPPLIED IN CONFORMITY WITH THE PURCHASING SPECIFICATION NO. AA19341.
2. FORGING TO BE SUPPLIED IN ROUGH MACHINED CONDITION. TOLERANCES ON ALL DIMENSIONS : ±2mm.
3. IDENTIFICATION MARKING SHALL BE DONE AT THE PLACE MARKED [redacted].

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Ref. Drawing No. 21074250277

W95310742085

AA19341

Sign & Date

BHARAT HEAVY ELECTRICALS LTD.
RANIPUR, HARDWAR

	NAME	SIGN	DATE	NO. OF VAR
DRN	MANOJ	sd/–	31.01.23	
CHD	SUBODH RANA	sd/–	31.01.23	–
APPD	ASHISH RANJAN	sd/–	31.01.23	

Inventory No.

DEPT	STE	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM No.	NO. OF ITEMS
CODE	4011	NTS	4394 01	–––––––		–

TITLE FORGING FOR JOINT PLANE–L/H (R/M)

CARD CODE

DRAWING NO. 4–10742–50998 01

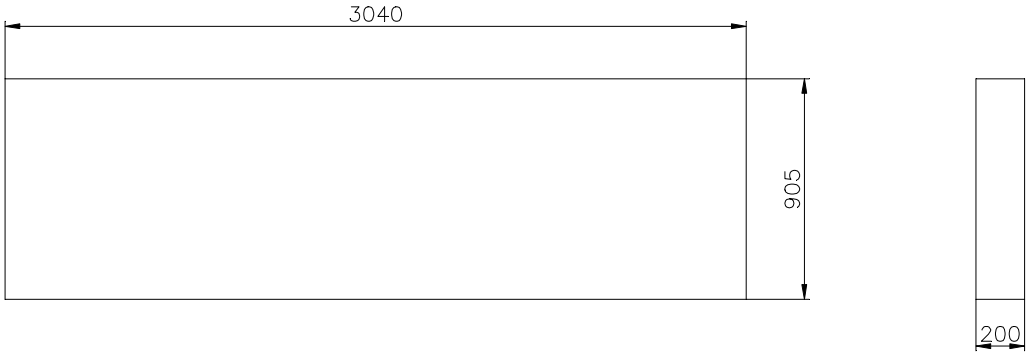
SHEET No. 01 | No. OF SHEETS 01

A4 SIZE

FIRST ANGLE PROJECTION | (ALL DIMENSIONS ARE IN mm) | FORM DG 38(B)

DRAWING No. 3-10742-31999

12.5 ALL OVER



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TECHNICAL REQUIREMENTS:

1. FORGING SHALL BE SUPPLIED AS PER BHEL SPEC. HW10178.
2. PERMISSIBLE TOLERANCES: + 2

ITEM NO.	DESCRIPTION	STD	DRAWING NO.				UNIT	
	FORGING FOR JOINT FLANGE		3-10742-31999		W95310742069			4319 00
					HW10178			
					MATERIALCODE	A	UNIT	UNIT WT.
				VAR	MATERIALSPEC	C		GS

Ref.Drawing No> 2-10742-31153

~~GMS No./~~ C B O M 0107423100000

STATUS OF DRG U

AGREED DEPT	NAME	SIGN	DATE
STE	RITESH	sd/-	20.02.20
WT	SKTHAKUR	sd/-	20.02.20

GRADE OF UNTOL. DIM
M/CG.- AA0230208 m
WELDING-CLASS 'B' OF AA0621104
GAS CUTTING-TABLE 3 OF AA0621101

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: STEAM TURBINE

BHARAT HEAVY ELECTRICALS LTD.
RANIPUR, HARDWAR

	NAME	SIGN	DATE
DRN	RAJPAL	sd/-	31.01.20
CHD	ASHISH	sd/-	31.01.20
APPD	TSG	sd/-	20.02.20

NO. OF VAR: -

REV	DATE	ALTERED / CHECKED

DEPT MTE | CODE 4300 | SCALE 1:20 | WEIGHT (KG) 4319.00 | REF. TO ASSY. DRG. - | ITEM No. - | NO. OF ITEMS -

TITLE : FORGING FOR JOINT FLANGE

CARD CODE

DRAWING NO. 3-10742-31999 -

SHEET No. 011 | No. OF SHEETS 101

Sign & Date | Inventory No.

SIZE A3

Self-Certification for local content

DECLARATION REGARDING MINIMUM LOCAL CONTENT IN LINE WITH REVISED PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 DATED 04TH JUNE, 2020 AND SUBSEQUENT ORDER(S)

(To be typed and submitted in the Letter Head of the Entity/Firm providing certificate as applicable)

To,

(BHEL HEEP Haridwar)

Dear Sir,

Sub: Declaration reg. minimum local content in line with Public Procurement (Preference to Make in India), Order 2017-Revision, dated 04th June, 2020 and subsequent order(s).

Ref: 1) GeM Bid Specification No: ……
2) All other pertinent issues till date

We hereby certify that the items/works/services offered by…… *(specify the name of the organization here)* has a local content of _____ % and this meets the local content requirement for **'Class-I local supplier' / 'Class II local supplier' **** as defined in Public Procurement (Preference to Make in India), Order 2017-Revision dated 04.06.2020 issued by DPIIT and subsequent order(s).

The details of the location(s) at which the local value addition is made are as follows:

1. _____ 2. _____

3. _____ 4. _____

…

Thanking you,
Yours faithfully,

(Signature, Date & Seal of Authorized Signatory of the Bidder)

****** - *Strike out whichever is not applicable.*

Note:

1. Bidders to note that above format, duly filled & signed by authorized signatory, shall be submitted along with the techno-commercial offer.
2. In case the bidder's quoted value is in excess of Rs. 10 crores, the authorized signatory for this declaration shall necessarily be the statutory auditor or cost auditor of the company (in the case of companies) or a practising cost accountant or practicing chartered accountant (in respect of suppliers other than companies).
3. In the event of false declaration, actions as per the above order and as per BHEL Guidelines shall be initiated against the bidder.

Certificate of No-deviation

CERTIFICATE OF NO DEVIATION

(To be Typed & submitted in the Letter Head of the Company/Firm of Bidder)

To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Subject: **No Deviation Certificate**

Ref: 1) GeM Bid No: ……,
2) All other pertinent issues till date

We hereby confirm that we have not changed/ modified/materially altered any of the tender documents as downloaded from the website/ issued by BHEL and in case of such observance at any stage, it shall be treated as null and void.

We also hereby confirm that we have neither set any Terms and Conditions and nor have we taken any deviation from the Tender conditions together with other references applicable for the above referred GeM Bid.

We further confirm our unqualified acceptance to all Terms and Conditions, unqualified compliance to Tender Conditions.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

(Signature, date & seal of authorized representative of the bidder)

Date:
Place:

DECLARATION REGARDING COMPLIANCE TO RESTRICTIONS UNDER RULE 144 (xi) OF GFR 2017

DECLARATION REGARDING COMPLIANCE TO RESTRICTIONS UNDER RULE 144 (xi) OF GFR 2017

(To be typed and submitted in the Letter Head of the Entity/ Firm providing certificate as applicable)

To,

(BHEL HEEP Haridwar)

Dear Sir,

Sub: Declaration regarding compliance to Restrictions under Rule 144 (xi) of GFR 2017

Ref: 1) GeM Bid No: .....,
2) All other pertinent issues till date

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I certify that _____ (SPECIFY THE NAME OF THE ORGANIZATION HERE), is not from such a country/ has been registered with the Competent Authority (attach valid registration by the Competent Authority, i.e., the Registration Committee constituted by the Dept. for Promotion of Industry and Internal Trade (DPIIT).

I hereby certify that we fulfil all requirements in this regard and is eligible to be considered.

Thanking you,
Yours faithfully,

(Signature, Date & Seal of
Authorized Signatory of the Bidder)

Note: Bidders to note that in case above certification given by a bidder, whose bid is accepted, is found to be false, then this would be a ground for immediate termination and for taking further action in accordance with law and as per BHEL guidelines.

Annexure-1

INTEGRITY PACT

Between

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

and

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

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____ [Item & GeM Bid No./Enquiry No./Tender ID] _____ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

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

Section 1- Commitments of the Principal

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

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

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

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

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

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

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

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Bharatiya Nyaya Sanhita (BNS) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

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

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

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above , the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be-entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee , whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years (to be reckoned from date of bid submission) with any other company in any country conforming to the anti-corruption approach in India that could justify his exclusion from the tender process. The date of such transgression, for the purpose of disclosure by the bidders in this regard, would be the date on which cognizance of the said transgression was taken by the competent authority. The transgression(s), for which cognizance was taken even before the said period of three years, but are pending conclusion, shall also be reported by the bidders.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)

6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.

6.2 In case of a joint venture, all the partners of the joint venture should sign the Integrity Pact. In case of Sub-contracting, the Principal Contractor shall be solely responsible for the adherence to the provisions of IP by the sub-contractor(s).

6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

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

Section 8 -Independent External Monitor(s)

8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact on receipt of any complaint by them from the bidder(s).

8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as /Top Secret are not to be disclosed.

8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

8.5 The role of IEM is advisory and the advice of IEM is non- binding on the Organization. However, as IEMs are invariably persons with rich experience who have retired as senior functionaries of the government, their advice would help in proper implementation of the IP.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of the tendering process, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an examination, and submit their joint recommendations to the Management. In case the full panel is not available due to some unavoidable reasons, the available IEM(s) will conduct examination of the complaints. Consent of the IEM(s), who may not be available, shall be taken on record.

8.7 The IEMs shall examine all the representations/grievances/ complaints received by them from the bidders or their authorized representative related to any discrimination on account of lack of fair play in modes of procurement and bidding systems, tendering method, eligibility conditions, bid evaluation criteria, commercial terms & conditions, choice of technology/ specifications etc.

8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.

8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.

8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs.

8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.

8.13 The word `Monitor' would include both singular and plural.

Section 9 - Pact Duration

9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

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

Section 10 - Other Provisions

10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.

10.2 Changes and supplements as well as termination notices need to be made in writing.

10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.

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

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

10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. If required, the Principal may adopt any mediation rules for this purpose. However, not more than five meetings shall be held for a particular dispute resolution. The fees/expenses on dispute resolution shall be equally shared by both the parties. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract.

29/01/2026

Jeetendra Mohan
Sr. Manager (PPX-FAB)
BHEL (HEEP)
Ranipur, Haridwar

For & On behalf of the Principal
(Office Seal)

Place HEEP, Haridwar
Date 29-01-2026

Witness: Singh
(Name & Address)
Praveen Kr. Singh
Dy. Manager/PPX-F
BHEL, HEEP Haridwar

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

Witness:
(Name & Address)

Annexure-2

Clause on IP in the tender

Integrity Pact (IP)

(a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl	IEM	Email
1.	Dr. Sarat Kumar Acharya, Ex-CMD, NLC	iem1@bhel.in
2.	Shri R. Mukundan, IRPS (Retd.)	iem2@bhel.in
3.	Shri Madan Lal Meena, IAS (Retd.)	iem3@bhel.in

(b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

(c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the panel of IEMs. All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)
Name: Jeetendra Mohan
Deptt: PPX-F
Address: BHEL, HEEP Haridwar
Phone: (Landline/ Mobile)
01334-281657
Email: jeetendra.mohan@bhel.in
Fax: _____

(2)
Name: Praveen Kr. Singh
Deptt: PPX-F
Address: BHEL, HEEP Haridwar
Phone: (Landline/ Mobile)
01334-284144
Email: pk-singh@bhel.in
Fax: _____