

**BHARAT HEAVY ELECTRICAL LIMITED**Ramachandrapuram
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Enquiry

CMM

Purchase
Department

Supplier's Copy	Enquiry No	Enquiry Date	No. of Items	Tender Due Date
	HPEP/CMM/AS Rounds/RC/2026	05.02.2026	74	16.02.2026

Enq. S.No.	Specification	Material Code	Item Description	Unit	Quantity	Delivery Schedule	Supplier Delivery Period
Refer Annexure I (List of Items) for details						16 Weeks	

Remarks: (Please read the long description of the items carefully before quoting)

1. Offers shall be submitted in two part bid system. **Tender evaluation: Group wise L1 basis as per enclosed Annexure I. Contract will be awarded Group wise and the determination of L1 will be done separately for each Group.**

2. Enclosures:

- i) Annexure I (List of Items)
- ii) Pre-Qualification Criteria (PQC)
- iii) BHEL Technical Specifications
- iv) BHEL Standard Quality Plans (SQP)
- v) Instructions To Bidders (ITB) with BHEL Standard Terms & Conditions
- vi) ITB Annexures
- vii) Special Conditions of Contract (SCC)
- viii) RA Guidelines
- ix) Integrity Pact document

For and on-behalf of
Bharat Heavy Electricals Limited
Venkatesh M
Manager / Purchase / CMM

Annexure I (List of Items - AS Rounds)

Tender evaluation: Group wise L1 basis.

Contract will be awarded Group wise and the determination of L1 will be done separately for each Group.

S/N	Material Code	Material Description	Specifications	RC Qty.	PQC No.	SQL No.
Group A						
1	AA1050202180	ROUND 50 IS5517 GR40 CR7AL10MO2	AA10502	4,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/EM/24-25/ASRNDS/009; Rev. No.: 02
2	AA1050202228	ROUND 71 IS5517 GR40 CR7AL10MO2	AA10502	5,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/EM/24-25/ASRNDS/009; Rev. No.: 02
3	AA1050202260	ROUND 100 IS5517 GR40 CR7AL10MO2	AA10502	2,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/EM/24-25/ASRNDS/009; Rev. No.: 02
4	HY1050202287	RND AS 125	AA10502	3,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/EM/24-25/ASRNDS/009; Rev. No.: 02
Group B						
5	AA1060220040	AS ROUND 8 DIN EN 10269 GR.21CRMOV5-7	AA10620	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
6	AA1060220059	AS ROUND 120 DIN EN 10269 GR.21CRMOV5-7	AA10620	18,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
7	AA1060220075	AS ROUND 12 DIN EN 10269 GR.21CRMOV5-7	AA10620	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
8	AA1060220083	AS ROUND 16 DIN EN 10269 GR.21CRMOV5-7	AA10620	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
9	AA1060220105	AS ROUND 20 DIN EN 10269 GR.21CRMOV5-7	AA10620	4,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
10	AA1060220148	AS ROUND 32 DIN EN 10269 GR.21CRMOV5-7	AA10620	16,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
11	AA1060220164	AS ROUND 40 DIN EN 10269 GR.21CRMOV5-7	AA10620	16,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
12	AA1060220180	AS ROUND 50 DIN EN 10269 GR.21CRMOV5-7	AA10620	16,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
13	AA1060220202	AS ROUND 63 DIN EN 10269 GR.21CRMOV5-7	AA10620	35,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
14	AA1060220229	AS ROUND 71 DIN EN 10269 GR.21CRMOV5-7	AA10620	30,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
15	AA1060220245	AS ROUND 80 DIN EN 10269 GR.21CRMOV5-7	AA10620	24,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
16	AA1060220253	AS ROUND 90 DIN EN 10269 GR.21CRMOV5-7	AA10620	35,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
17	AA1060220261	AS ROUND 100 DIN EN 10269 GR.21CRMOV5-7	AA10620	30,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
18	AA1060220270	AS ROUND 110 DIN EN 10269 GR.21CRMOV5-7	AA10620	12,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
19	AA1060220288	AS ROUND 125 DIN EN 10269 GR.21CRMOV5-7	AA10620	24,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
20	AA1060220296	AS ROUND 140 DIN EN 10269 GR.21CRMOV5-7	AA10620	24,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
21	AA1060220300	AS ROUND 160 DIN EN 10269 GR.21CRMOV5-7	AA10620	24,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
22	AA1060220318	AS ROUND 180 DIN EN 10269 GR.21CRMOV5-7	AA10620	24,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
23	AA1060220326	AS ROUND 200 DIN EN 10269 GR.21CRMOV5-7	AA10620	12,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
24	HY1060220687	RND AS, HTS 130	AA10620	6,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
25	HY1060220725	RND AS, HTS 250	AA10620	60,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
Group C						
26	AA1060222043	AS RND 115 DIN EN 10269GR.20CRMOVTIB4-10	AA10622	16,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
27	AA1060222191	AS RND 56 DIN EN10269 GR.20CRMOVTIB4-10	AA10622	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
28	AA1060222205	AS RND 63 DIN EN 10269 GR.20CRMOVTIB4-10	AA10622	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
29	AA1060222256	AS RND 90 DIN EN 10269 GR.20CRMOVTIB4-10	AA10622	8,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
30	AA1060222264	AS RND 100 DIN EN10269GR.20CRMOVTIB4-10	AA10622	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
31	AA1060222302	AS RND 160 DIN EN 10269GR.20CRMOVTIB4-10	AA10622	12,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
32	HY1060222647	RND AS, HTS 130	AA10622	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
Group D						
33	HY1050261690	RND AS 180	HY10561	5,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/011; Rev. No.: 02
34	HY1050261712	RND AS 250	HY10561	6,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/011; Rev. No.: 02

Group E						
35	HY1050263014	RND AS 160	HY10563	15,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/011; Rev. No.: 02
36	HY1050263022	RND AS 300	HY10563	16,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/011; Rev. No.: 02
37	HY1050263030	RND AS 220	HY10563	20,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/011; Rev. No.: 02
Group F						
38	HY1050265220	RND AS 71 ANLD	HY10565	2,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/010; Rev. No.: 02
39	HY1050265300	RND AS 160 ANLD	HY10565	2,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/010; Rev. No.: 02
40	HY1050265343	RND AS 250 ANLD	HY10565	2,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/24-25/ASRNDS/010; Rev. No.: 02
Group G						
41	HY1050266269	ROUND AS GP 100MM.	HY10566	4,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/22-23/05; Rev. No. : 02
42	HY1050266714	ROUND AS GP 60MM.	HY10566	4,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/22-23/05; Rev. No. : 02
Group H						
43	HY1060263084	RND AS 16 HTS	HY10663	20,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
44	HY1060263122	RND AS 25 HTS	HY10663	6,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
45	HY1060263149	RND AS 32 HTS	HY10663	6,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
46	HY1060263165	RND AS 40 HTS	HY10663	60,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
47	HY1060263181	RND AS 50 HTS	HY10663	6,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
48	HY1060263203	RND AS 63 HTS	HY10663	12,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
49	HY1060263220	RND AS 71 HTS	HY10663	16,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
50	HY1060263246	RND AS 80 HTS	HY10663	6,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
51	HY1060263254	RND AS 90 HTS	HY10663	20,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
52	HY1060263262	AS ROUND DIA 100MM	HY10663	8,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
53	HY1060263270	AS (HTS) RND 110	HY10663	15,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
54	HY1060263297	RND AS 140 HTS	HY10663	15,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
55	HY1060263300	RND AS 160 HTS	HY10663	15,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
56	HY1060263319	RND AS 180 HTS	HY10663	15,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
57	HY1060263688	RND AS 130 HTS	HY10663	8,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
58	HY1060263696	RND AS 120 HTS	HY10663	45,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/09; Rev. No.: 05
Group I						
59	HY1060264137	RND AS 28	HY10664	15,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
60	HY1060264153	RND AS 36	HY10664	15,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
61	HY1060264161	RND AS 40	HY10664	8,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
62	HY1060264188	RND AS 50	HY10664	8,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
63	HY1060264200	RND AS 63	HY10664	22,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
64	HY1060264226	RND AS 71	HY10664	15,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
65	HY1060264242	RND AS 80	HY10664	60,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
66	HY1060264269	RND AS 100	HY10664	45,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
67	HY1060264285	RND AS 125	HY10664	18,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
68	HY1060264307	RND AS 160	HY10664	50,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
69	HY1060264340	RND AS 250	HY10664	7,000	PQC_AS_ROUNDS REV 05	HYQA/SQP/CMM/ROUND/23-24/03; Rev. No.: 03
Group J						
70	HY1060265346	RND AS, HTS 250	HY10665	36,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
71	HY1060265362	RND AS, HTS 300	HY10665	48,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
72	HY1060265648	RND AS, HTS 350	HY10665	60,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
73	HY1060265656	RND AS, HTS 400	HY10665	60,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/RND/23-24/10; Rev. No. : 05
74	HY1060266342	RND AS, HTS 250	HY10666	2,000	PQC_AS_VD_ROUNDS Rev 07	HYQA/SQP/CMM/37; Rev. No.: 03

Pre-Qualification Criteria (PQC) for Alloy Steel Rounds

Doc. No.

PQC_AS_ROUNDS REV 05

Applicable specifications: HY10561, HY10565, HY10664, AA10502, HY10563, HY10566

Sl. No.	Pre-Qualification Criteria	Supplier conformance	Remarks
1.0	Offers to be submitted by manufacturer or their subsidiaries (own stockists) will only be considered. Offers from traders will be considered only if the original manufacturer details along with the experience as required in cl 2.0 below is submitted, along with the tie-up letter prior to enquiry date. (Note: The vendors who are in receipt of trial order by any BHEL Unit of enquired material and are yet to supply the material successfully will not be eligible to participate in this tender, as this requirement is pertaining to firm orders by BHEL customers.)		
2.0	Past experience data as given below shall be submitted:		
2.1	Bidder shall submit at least three purchase orders (with Min. Qty. 1Ton for ϕ150mm & 2 Ton for >math>\phi</math>150mm), mill/manufacturer test certificates for the same or higher-grade material in the range of $\pm\phi</math>30mm of required size of enquiry, that are supplied by them to other customers, shall be submitted along-with the offer. The MTC shall necessarily indicate/mention the manufacturer's location/ address.$		
2.2	The date of the issue of "Test certificate" shall not be older than 5 years from the NIT date. This compliance may be met through MTCs submitted against a single customer order or multiple customer orders.		
2.3	The mill test certificate shall include the results / reports for all the tests like Chemical, Mechanical, Heat treatment charts etc along with melting practice followed, as required by BHEL specification applicable to the present enquiry. Also, Calibration records of Heat treatment furnaces and other instruments that are used for heat treating shall be submitted.		
3.0	Bidder shall submit the manufacturer's in-house facilities like furnace, secondary refining, rolling / forging, heat treatment etc. to manufacture forged or rolled bars of size range mentioned in enquiry. In case of outsourcing of any of the above activities, vendor shall inform their sources with details of their sub supplier facilities and experience for same material grade along with their tie-up agreement.		
4.0	Manufacturer shall necessarily have in house testing facilities for both destructive and non-destructive testing facilities to carry out testing as per the requirements of BHEL specification. Calibration details of all testing facilities required for material testing or prove out shall be submitted. Outsourcing of material testing is not permitted.		

6.0	Vendor to confirm that all required NDT (UT, PMI, etc.) will be performed by Level-II qualified personnel using calibrated equipment, and all mechanical & chemical tests to be carried out at NABL-accredited labs .		
7.0	Prior to dispatch of material to BHEL, test certificates shall be sent to BHEL.		
8.0	Vendors to confirm that they will meet all the requirements of BHEL specification provided with the enquiry. Clause wise confirmation to be given along with technical offer.		
9.0	BHEL reserves the right to seek for retest of the material after review of TCs, if any.		

Pre-Qualification Criteria (PQC) for Alloy Steel Rounds (With VD).					Doc. No.
Applicable specifications: AA10620/HY10665, AA10622, HY10663, HY10666					PQC_AS_VD_ROUNDS Rev 07
Sl. No.	Pre-Qualification Criteria			Supplier conformance	Remarks
1.0	Offers to be submitted by the manufacturers having in-house Vacuum degassing (VD) facility or any other process as per Cl. 6 of Tech. specification shall be considered. The details of the forging and hot rolling facilities (in-house or sub-contract) shall also be submitted for consideration of the technical offer. (Note: The vendors who are in receipt of trial order by BHEL Hyderabad and are yet to supply the material successfully will not be eligible to participate in this tender as this requirement is pertaining to firm orders by BHEL customers).				
2.0	Past experience data as given below shall be submitted:				
2.1	Supplier shall submit below documents:				
	a) Evidences of at least three purchase orders execution (with Min. Qty. 1Ton for $\phi 150\text{mm}$ & 2 Ton for >math>\phi 150\text{mm}</math>), for the same or higher-grade material in the range of $\pm\phi 30\text{mm}$ of required size of enquiry, that are manufactured using the same manufacturing facilities supplied by them to other customers, shall be submitted along-with the offer.				
	b) Mill/Manufacturer test certificates of these references (MTC shall necessarily indicate/mention the manufacturer's location/ address).				
	c) Bidder shall submit a "Short-Term Creep Rupture Test Report" (as per ASTM E139) for the enquired material grade steel for technical qualification. Creep test reports shall be from the NABL accredited lab (as per DIN EN10213/EN10269).				
Test Parameters					
Matl. Grade		21CrMoV57	25CrMo4	20CrMoVTiB410	11CrMo910
Stress (MPa)		235	122	380	150
Temperature (°C)		550			
Duration (Hrs)		1000			
Test pieces (Nos.)		3			
2.2	The date of the issue of "Test certificate" shall not be older than 5 years from the NIT date. This compliance may be met through MTCs submitted against a single customer order or multiple customer orders.				
2.3	The mill test certificate shall include the results / reports for all the tests like Chemical, Mechanical, Heat treatment charts etc along with melting practice followed, as required by BHEL specification applicable to the present enquiry. Also, Calibration records of Heat treatment furnaces and other instruments that are used for heat treating shall be submitted.				
3.0	Manufacturer shall submit the details of in-house facilities like Electric furnace, Vacuum degassing, secondary refining, forging, heat treatment, destructive and NDT facilities etc. required to manufacture forged bars of size range mentioned in enquiry. In case of outsourcing of any of the above activities, vendor shall inform their sources with details of their sub supplier facilities and experience for same material or higher material grade along with their tie-up agreement.				

3.1	In case the bidder is a trader or a manufacturer (with in-house hot rolling/forging facilities), the steel ingot/billet/bloom shall be sourced strictly from the BHEL approved steel mill vendors as stated in Annexure-1 . Any deviation from the list at later stage will be deemed for rejection.		Confirmation with signed Annexure-1 to be submitted by bidder.
4.0	For traders, the business tie-up letter (MOU) in the letter head of the trader or their manufacturer shall be submitted along with the offer. Note: The tie-up letter (MOU) shall be prior to date of the issue of BHEL tender date.		
5.0	Prior to dispatch of material to BHEL, test certificates shall be sent to BHEL.		
5.1	Vendor to confirm that all required NDT (UT, PMI, etc.) will be performed by Level-II qualified personnel using calibrated equipment, and all mechanical & chemical tests will be carried out at NABL-accredited labs .		
6.0	Vendors to conform that they will meet all the requirements of BHEL specification provided with the enquiry. Clause wise conformation to be given along with technical offer.		
6.1	To meet the UT (NDT) requirements, vendor to confirm the proof machining as per the attached Annexure-2 for forged rounds		Confirmation with signed Annexure-2 to be submitted by bidder.
7.0	BHEL reserves the right to seek for retest the material after review of TCs, if any.		

Enclosure:

Annexure-1 (BHEL Approved Raw Material Sources)

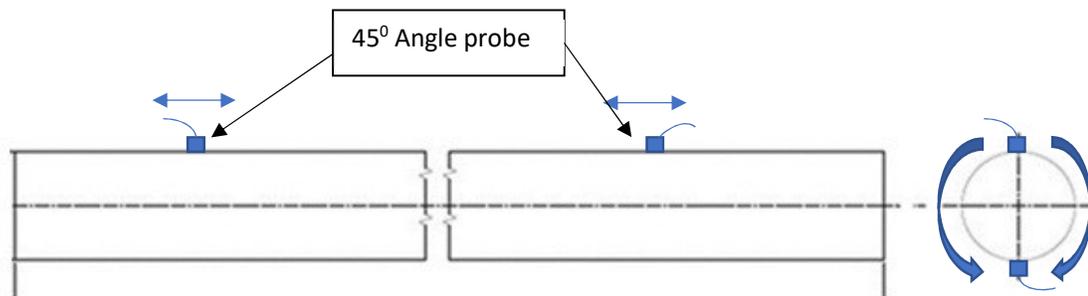
Annexure-2 (Additional UT (NDT) & Proof Machining Details)

Annexure - 1 (BHEL Approved Raw Material Source)		
Material Specification	Material Grade	BHEL Approved Manufacturers
HY10665/AA10620/AA19308 HY10663 HY10666	21CrMoV57 25CrMo4 11CrMo9-10	1. Mahindra Sanyo Special Steel, Khopoli
		2. Star Wire (India) Ltd, Ballabgarh
		3. CFFP, BHEL, Haridwar
		4. Saarloha Advance Materials, Pune
		5. Mishra Dhatu Nigam Limited, Hyderabad
		6. Saurabh Metals Pvt Ltd, Bhopal
		7. <i>Metal Ravne, Slovenia</i>
		8. <i>BGH Germany</i>
		9. Arcvac Forgecast Private Limited, Kolkata
		10. KISCO Castings (India) Limited, Mandi Gobindgarh
		11. Laxcon Steel Limited, Ahmedabad
		12. STEEL AUTHORITY OF INDIA LTD.
		13. Goradia Special Steels Limited. Khopoli
AA10622	20CrMoVTiB4-10	1. Mishra Dhatu Nigam Limited, Hyderabad
		2. STEEL AUTHORITY OF INDIA LTD.
		3. <i>BGH Edelstahl Freital GmbH</i>
		4. Arcvac Forgecast Private Limited, Kolkata
		5. Saarloha Advance Materials, Pune
		6. CFFP, BHEL, Haridwar
		7. Star Wire (India) Ltd, Ballabgarh
		8. Mahindra sanyo Special Steel, Khopoli
		9. Laxcon Steel Limited, Ahmedabad
		10. <i>Metal Ravne Slovenia</i>
		11. Goradia Special Steels Limited. Khopoli
		12. Saurabh Metals Pvt Ltd, Bhopal
HY10767/HY19393	X22CrMoV121	1. Saarloha Advance Materials, Pune
		2. STEEL AUTHORITY OF INDIA LTD.
		3. Mishra Dhatu Nigam Limited, Hyderabad
		4. <i>BGH Edelstahl Freital GmbH</i>
		5. Arcvac Forgecast Private Limited, Kolkata
		6. Star Wire (India) Ltd, Ballabgarh
		7. Mahindra Sanyo Special Steel, Khopoli
		8. Laxcon Steel Limited, Ahmedabad
		9. KISCO Castings (India) Limited, Mandi Gobindgarh
		10. Goradia Special Steels Limited. Khopoli
		11. <i>Metal Ravne, Slovenia</i>
		12. Saurabh Metals Pvt Ltd, Bhopal

UT ADDITIONAL REQUIREMENTS

The following requirements shall be followed while carrying out UT in addition to requirements of the standard mentioned in Approved Quality plan/Product Specification for performing UT of Forgings:

- UT shall be performed by using 45° angle beam probe in 4 directions as shown in below sketch. Sensitivity shall be established by picking up corner echo
Calibration shall be established by picking up 1.5mm SDH hole of IIW V1 block which is at a depth of 35mm. This indication amplitude shall be set to 80% and this shall be the amplitude reference line. Any indication crossing this amplitude shall be rejected.



- The surface roughness of exterior finishes shall not exceed 250 $\mu\text{in.}$ or 6 μm (as per clause 8.2 of ASTM A388). To obtain this surface finish, forging shall be rough machined.
- Dye Penetrant Testing shall be performed for detection of any surface defects. Acceptance standards shall be as follows:
All surfaces to be examined shall be free of:
 - (a) relevant linear indications;
 - (b) relevant rounded indications greater than 5 mm.
 - (c) four or more relevant rounded indications in a line separated by 1/16 in. (1.5 mm) or less (edge to edge).
 Note:
 - (a) A linear indication is one having a length greater than three times the width.
 - (b) An indication is considered as relevant when major dimensions greater than 1.5mm.

Vendor's Signature with Seal



CORPORATE PURCHASING SPECIFICATION

AA10502

Rev No.09

PREFACE SHEET

1.5% CHROMIUM – ALUMINIUM – MOLYBDENUM NITRIDING STEEL BARS - H & T

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards:

1. INDIAN : IS 5517 – 1993, Gr: 40Cr7Al10Mo2, Type J, H & T

Suggested/Probable Suppliers and Grades:

Refer Plant Vendors list

User Plants and Replaced Plant Specifications/References:

1. HEP, BHOPAL : PS10605 & PS10567
2. HEEP, HARDWAR : HW0210299
3. HPEP, HYDERABAD : HY0210299

Revisions:

As per Clause No.39.8 of MOM of MRC-S&GPS

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CORPORATE PURCHASING SPECIFICATION

AA10502

Rev No. 09

PAGE 1 of 4

1.5% CHROMIUM – ALUMINIUM – MOLYBDENUM NITRIDING STEEL BARS - H & T

1.0 GENERAL:

This specification governs the quality requirements of 1.5% Chromium-Aluminium-Molybdenum Nitriding Steel Bars, Gr:40Cr7Al10Mo2, in hardened and tempered condition.

2.0 APPLICATION:

For the manufacture of valve spindles, guide bushes, valve seats etc.

3.0 CONDITION OF DELIVERY:

Hot Rolled / Forged, Hardened and tempered.

Note: Sizes upto 100mm in hot rolled
>100 to 180mm in hot rolled or forged
above 180mm in forged

The ends of bars shall be reasonably square and true.
The bars shall be supplied in straight lengths without twists and bends.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply with the requirements of the following National standard and also meet the requirements of this specification.

IS: 5517 – 1993 : Steel for Hardening and Tempering – Specification
Gr: 40Cr7Al10Mo2, Type: J :
Hardened & Tempered

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes:

The bars shall be supplied to the dimensions specified In BHEL order.

5.2 Tolerances:

5.2.1 For Forged bars:

The tolerances shall be + 8 mm – 0 mm

5.2.2 Tolerances on hot rolled bars shall comply with those of Grade 2 of IS: 3739: reproduced below:

Revisions:

As per Clause No.39.8 of MOM of MRC-S&GPS

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CORPORATE PURCHASING SPECIFICATION



Round and Square Bars:

Nominal size. Mm		Tolerance, mm	
Over Upto & Including		Permissible deviation	Out of round/ square
---	25	± 0.50	0.50
25	50	± 0.75	0.75
50	80	± 1.00	1.00
80	100	± 1.25	1.25
100	125	± 1.50	1.50
125	160	± 2.00	2.00
160	200	± 2.50	2.50
200	250	± 3.00	3.00

5.2.3 On Straightness

Unless otherwise agreed to, the permissible deviation in straightness, shall not exceed the following limits in any 1000 mm length of the bar.

Upto & incl. 40 mm size of bars - 6 mm

Above 40 mm size of bars - 5 mm

5.3 Length

Bars shall be supplied in 3 to 6 metres length or in multiples with maximum of 10% shorts down to 1 metre.

Forged bars shall be supplied in length of 1.5 to 3 metres.

6.0 MANUFACTURE:

Material shall be manufactured from fully killed steel.

7.0 HEAT TREATMENT:

The recommended heat treatment is as follows:

Harden in oil / water from a temperature of 850 – 900°C.

Temper at a suitable temperature between 550 – 700°C.

8.0 FREEDOM FROM DEFECTS:

The bars shall be sound, straight and free from internal and surface defects, such as seams, laps, cracks or any other defects which may impair the end use.

9.0 CHEMICAL COMPOSITION:

The melt analysis of steel and the permissible variation in the composition of the finished product from the melt analysis shall be follows:



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Element	Melt analysis, percent,		Permissible variation, percent, in product analysis
	Min.	Max.	
Carbon	0.35	0.45	± 0.02
Silicon	0.10	0.35	± 0.03
Manganese	0.40	0.70	± 0.04
Chromium	1.50	1.80	± 0.05
Molybdenum	0.10	0.25	± 0.03
Aluminium	0.90	1.30	± 0.10
Sulphur	---	0.035	+ 0.005
Phosphorus	---	0.035	+ 0.005

10.0 TEST SAMPLES:

10.1 One sample shall be taken from each melt for chemical analysis.

10.2 One sample shall be taken from each heat treatment batch for testing of mechanical properties. Test pieces for mechanical tests shall be taken in the longitudinal direction of the piece in accordance IS 5517.

For ruling section up to & including 40mm, the test piece shall be machined coaxially from the test bars. For ruling section above 40mm the longitudinal axis shall be atleast 12.5 mm from surface of the test bars.

Test methods for determining mechanical properties shall be as per IS:1598 (For IZOD impact test)/IS:1757 (For impact test in ISO-V Charpy) and IS:1608 (For tensile test).

10.3 For ruling section above 200mm, tensile test samples can be taken in tangential or transverse direction.

11.0 MECHANICAL PROPERTIES (In Hardened and Tempered Condition)

Ruling section, mm	Tensile strength, N/mm ²	0.2% PS/YS N/mm ² , min	% E $5.65\sqrt{S_0}$ min	* IZOD impact J, min
≤ 63	900 – 1050	700	15	48 (42)
> 63 to ≤ 100	800 – 950	600	16	55 (50)
>100	700 – 850	540	18	55 (50)

* Average of 3 samples applicable for sizes above 16 mm ruling section only. Values in bracket are in ISO - V Charpy.

CORPORATE PURCHASING SPECIFICATION



12.0 ULTRASONIC TEST:

12.1 Each bar above 100 mm shall be tested ultrasonically in accordance with BHEL standard AA0850118 to ensure freedom from internal defects. The norms of acceptance shall be as per category 2 of the above standard.

12.2 Optional tests: If specified on order, each bar >40 to 100 mm shall be tested ultrasonically in accordance with BHEL standard AA0850118 to ensure freedom from internal defects and the norms of acceptance shall be as per category 2 .

13.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied, unless otherwise stated on the order. In addition, the supplier shall ensure to enclose one copy of the test certificate along with their dispatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

BHEL References:

AA10502, Rev.No.09:1.5% Chromium – Aluminium – Molybdenum Nitriding Steel Bars - H & T
BHEL order No,

Result of Tests:

Dimensional inspection.

Results of chemical analysis, mechanical and Ultrasonic tests.

Supplier's References:

Name

Identification No.

Melt No.

Details of heat treatment.

14.0 PACKING AND MARKING

The bars shall be suitably packed in bundles to prevent corrosion and damage during transit. All bars 50mm and above in diameter or of equivalent cross sectional area shall be stamped with 'AA10502' and melt number on the side near the end or on the face.

Bars below 50 mm shall be bundled together and tied with wire at 3 to 4 places along the length of the bars.

A metal label shall be securely attached to each bundle and shall bear the following information:

AA10502:1.5% Chromium – Aluminium – Molybdenum Nitriding Steel Bars - H & T
BHEL Order No.

Consignment/Identification No.

Melt No.

Size and Weight.

Supplier's Name.

15.0 REFERRED STANDARDS (latest publications including amendments):

- | | | |
|------------|------------|--------------|
| 1) IS:1598 | 2) IS:1608 | 3) IS:1757 |
| 4) IS:3739 | 5) IS:5517 | 6) AA0850118 |

**CORPORATE PURCHASING SPECIFICATION**

AA 106 20

Rev. No. 09

PREFACE SHEET

**BOLTING STEEL BARS FOR HIGH TEMPERATURE SERVICE-H & T
(Gr: 21CrMoV5-7+QT)****FOR INTERNAL USE ONLY
REMOVE THIS PREFACE SHEET BEFORE ISSUE TO SUPPLIERS****Comparable Standards:**GERMAN : DIN EN 10269-1999
Gr: 21CrMoV5-7 (1.7709)**Suggested / Probable Suppliers and Grades:**

As per user plant vendor list

User Plant References:

1. HYDERABAD : HY10665
2. PIPING CENTRE, MADRAS : A 193, B7
3. TIRUCHY : A 193, B7
4. HARIDWAR : HW10673, HW10681

Revisions : As per Email Dt.16.03.2011 from
Shri Vimal Kishore, BHEL Hyderabad.**APPROVED :**
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**CORPORATE PURCHASING SPECIFICATION**

AA 106 20

Rev. No. 09

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**BOLTING STEEL BARS FOR HIGH TEMPERATURE SERVICE - H & T
(Gr.:21CrMoV5-7+QT)****1.0 GENERAL:**

This specification governs the quality requirements of 21CrMoV5-7 bolting steel bars in hardened and tempered condition upto 600 mm diameter / size.

2.0 APPLICATION:

For the manufacture of steam turbine bolts, nuts, studs, spindles, bushes and other components operating in the temperature range of 300 - 540^o C.

3.0 CONDITION OF DELIVERY:

Hot rolled/Forged and Hardened and Tempered.

The bars shall be supplied with ends square and true. The bars shall be supplied in straight lengths without twists and bends.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply, in general, with the requirements of the following National standard and also meets the requirements of this specification.

DIN EN 10269-1999 Gr. 21 Cr Mo V 57 :Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties.

5.0 DIMENSIONS AND TOLERANCES:**5.1 Sizes:**

Bars shall be supplied to the dimensions specified in BHEL order.

5.1.1 Length:

Unless otherwise specified, hot rolled bars shall be supplied in 3 to 6 metres length or in multiples with maximum of 10 per cent, shorts down to 1 metre.

Forged bars shall be supplied in lengths of 1.5 to 3 metres.

Revisions : As per Email Dt.16.03.2011 from
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**5.2 Tolerance:****5.2.1 Hot rolled bars:**

The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars:

The tolerance on the forged bars shall be as follows:

<u>Diameter, mm</u>	<u>Tolerance, mm</u>
50 to 125	+ 6.0
125 to 175	+ 8.0
175 ---	+ 12.5

Note: (FOR HOT ROLLED & FORGED BARS)

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerances on each size.

6.0 MANUFACTURE:

Steel shall be made by basic electric process and subsequently vacuum degaussed. If any other process is employed, it shall be to mutual agreement between the supplier and BHEL.

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

7.0 HEAT TREATMENT:

7.1 The bars shall be heat treated as per EN10269 to get the mechanical properties specified as per clause 12.0.

7.2 Following heat treatment is suggested:

Harden at 900-950^o C, cooling in the circulated air / oil depending on Cross Section.
Temper at 680 - 720^oC, minimum 2 hours.

The duration of tempering as well as the controlled cooling rate are to be chosen to achieve minimum residual stress.

7.3 If the bars need straightening after heat treatment, the straightening operation shall be followed by stress relief annealing at 30^oC below the tempering temperature with slow cooling after the total straightening process.

8.0 FREEDOM FROM DEFECTS:

The bars shall be straight, sound and free from internal and surface defects viz., cracks, piping, scabs, laps, hairline cracks, etc. The bars shall be free from twists and bends.

9.0 FINISH:

9.1 The surface of the bars shall be smooth without any laps, rolled in scales, etc. Dents roll marks and scratches are permitted provided their depth does not exceed half the tolerance limits specified in clause 5.0.

9.2 The edges of bars shall be cut square by sawing or shearing and no crop ends shall be permissible.

**10.0 CHEMICAL COMPOSITION:**

The analysis of the material and the permissible variation in the composition from the specified limits shall be as follows:

Element	Percent for bar dia upto 160mm		Percent for bar dia. 160-600mm		Permissible Variation,%
	min.	max.	min.	max.	
Carbon	0.17	0.25	0.17	0.25	± 0.02
Silicon	-	0.40	0.15	0.35	+ 0.05
Manganese	0.40	0.80	0.35	0.85	± 0.04
Chromium	1.20	1.50	0.90	1.20	± 0.05
Molybdenum	0.55	0.80	0.65	0.80	± 0.05
Vanadium	0.20	0.35	0.25	0.35	± 0.03
Sulphur	--	0.020	--	0.020	+ 0.005
Phosphorus	--	0.020	--	0.020	+ 0.005
Copper	-	0.20	--	0.20	
Tin	-	0.025	--	0.025	
Arsenic	-	0.010	--	0.010	
Antimony	-	0.010	--	0.010	
Aluminium (Total)	-	0.03	--	0.015	
Nickel	-	0.60	0.50	0.80	

11.0 TEST SAMPLES:**11.1 CHEMICAL ANALYSIS:**

Each melt shall be analysed for chemical composition.

11.2 MECHANICAL TESTS:

A hardness test is to be carried out to verify the uniformity of the strength within the delivery lot (per melt and heat treatment batch). The test amount shall be 10% of the bars, but not less than 10 bars. In case order is of less than 10 bars, all bars shall be hardness tested. Mechanical properties shall be tested on hardest and softest bar.

The taking of specimens has to be carried out according to EN 10269 with the following exception:

Up to a diameter (d) or an edge length (a,b) > 160 mm, the transverse specimens can be taken (instead of longitudinal specimens).

**12.0 MECHANICAL PROPERTIES:****12.1 Tensile:**

When tested in accordance with IS:1608, the test pieces shall show the following properties (values for transverse specimens in brackets):

Property	Bar < 160mm	Bar 160-600mm
Tensile strength, N/mm ²	700-850	700-850
0.2% Proof stress, N/mm ² , min	550	550
Elongation (l = 5d), % min.	16	16 (13)
Reduction in area, % min.	60	60 (35)
Impact energy (J) *	63	63 (20)
Hardness (HB 30)	210-250	215-260

* **Charpy Impact (ISO - V) Value :**

When tested in accordance with IS : 1757, the piece shall show a minimum average Charpy impact value over three test values as specified above. Only one test value out of the three can be below the specified value but in no case shall be less than two-thirds the minimum specified value. All the 3 test values shall, however, be reported.

The test is applicable for bars of sizes above 16 mm only.

13.0 NON-DESTRUCTIVE TEST:

13.1 Verification inspection of all bars.

13.2 100% Ultrasonic inspection of all bars above 40mm size according to EN 10308 type 1a and 1c table 1). Acceptance criteria are as follows.

- **d or (a,b) = 200mm quality class 4**
- **d or (a,b) = 200mm quality class 3**

In general, the decision limit for loss of back wall echo is 3 dB and for the real reflector length max. 10mm.

14.0 RETESTS:

As per EN10021.

15.0 TEST CERTIFICATE:

Three copies of test certificates shall be supplied unless otherwise stated on the order.

In addition the supplier shall ensure to enclose one copy of test certificate alongwith their dispatch documents to facilitate quick clearance of material.

The test certificate shall bear the following information:

BHEL references:

BHEL order No.

AA 106 20 , Rev.No. 08: Bolting Steel bars for HTS - H & T (Gr.:21CrMoV5-7- QT)

Supplier Referances:

Supplier's Name

Heat or Cast No.

Process of manufacture

Identification No.

Particulars of heat treatment & Batch No.

**Results of Tests:**

Chemical analysis

Mechanical properties

Ultrasonic test

Results of dimensional inspection

Mill test certificate

The certificate must be signed by the Chief, Inspection Department / Chief Metallurgist of the supplier's plant.

16.0 PACKING AND MARKING:

Bars shall be suitably packed to prevent corrosion and damage during transportation.

Bars over 63 mm diameter shall be individually stamped / painted on one end face with cast number and AA 106 20. Bars of 63 mm diameter and less shall be bundled together and identified by means of a metal label stating the cast number and specification No. AA 106 20 attached to the bundle.

Each package shall, in addition bear the following information:

AA 106 20 : Bolting Steel bars for HTS - H & T (Gr.:21CrMoV57)

BHEL Order No.

Supplier's name and trade mark, if any.

Cast / Batch No.

Identification No.

Size and quantity supplied.

17.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) DIN 10269

2) IS: 3739

3) IS:1608

4) IS:1757

5) EN 10228-3

6) EN10021

Note: Alternative equivalent standards are acceptable with prior agreement.



CORPORATE PURCHASING SPECIFICATION

AA10622

Rev No.10

PREFACE SHEET

ALLOY STEEL BARS FOR HIGH TEMPERATURE BOLTS UPTO 565° C – H&T (20CrMoVTiB4 – 10)

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards:

- 1) EUROPEAN : EN 10269 – 2013 (Gr: 20CrMoVTiB4 – 10)

Suggested / Probable Suppliers and Grades:

Refer Plant vendor's list.

User Plants and Replaced Plant Specifications/References:

- 1) HEP, BHOPAL :
2) HEEP, HARDWAR :
3) HPEP, HYDERABAD :

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CORPORATE PURCHASING SPECIFICATION

AA10622

Rev No. 10

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ALLOY STEEL BARS FOR HIGH TEMPERATURE BOLTS UPTO 565° C – H&T (20CrMoVTiB4 – 10)

1.0 GENERAL:

This specification governs the quality requirements of alloy steel bars suitable for machining.

2.0 APPLICATION:

Used mainly for bolts, nuts and studs etc.

3.0 CONDITION OF DELIVERY:

Hot rolled/forged bars shall be supplied in the hardened and tempered condition according to EN10269 to comply with the mechanical properties specified in the specification.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

There is no Indian standard covering this material. However, assistance has been derived from EN 10269 material grade 20CrMoVTiB4 – 10 “Steels and Nickel alloys for fasteners with specified elevated and / or low temperature properties”.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes:

Bars shall be supplied to the dimensions specified in BHEL order.

5.1.1 Length:

Unless otherwise specified, hot rolled bars shall be supplied in 3 to 6 meters length or in multiples with maximum of 10 per cent, shorts down to 1 meter.

Forged bars shall be supplied in lengths of 1.5 to 6 meters

5.2 Tolerances:

5.2.1 Hot rolled bars:

The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars:

The tolerance on the forged bars shall be as follows:

<u>Diameter, mm</u>	<u>Tolerance, mm</u>
> 50 to 125	+ 6.0
>125 to 175	+ 8.0
>175	+ 12.5

Revisions:
As per Clause No.39.7.3 A) of MOM of MRC –
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CORPORATE PURCHASING SPECIFICATION



Note: (FOR HOT ROLLED & FORGED BARS)

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerances on each size.

6.0 MANUFACTURE

The steel shall be made by electric furnace process and degassed (e.g. vacuum degassed). Any other process shall be subjected to the mutual agreement between BHEL and the manufacturers.

Note: The material as per this specification shall be supplied by the manufacturers who are having complete in-house steel melting, refining, hot rolling/forging/blooming/etc., heat treatment and testing facilities.

7.0 HEAT TREATMENT

Following heat treatment parameters are suggested to achieve the mechanical properties specified in Clause 11.0 of this specification.

Bars shall be annealed at 660 – 700°C followed by air cooling, hardened by heating uniformly to 970 – 990°C and quenching in air / water / oil. They shall be tempered at temperatures between 680 – 720°C.

If bars need to be straightened after heat treatment, stress relieving is mandatory after completion of the entire straightening process. Stress relieving shall be carried out at 30°C below the actual tempering temperature with a subsequent slow cooling rate.

8.0 FREEDOM FROM DEFECTS

The bars shall be straight, sound and free from internal defects. Cracks, other material separations or more severe linear inclusion lines are only acceptable when located in the dimensional tolerance areas.

9.0 CHEMICAL COMPOSITION:

The analysis of the material shall be as follows:

Element (wt%)	C	Si	Mn	Cr	Mo	V	Ti	B	S	P*	Al**
Minimum	0.17	–	0.35	0.90	0.90	0.60	0.07	0.001	–	–	0.015
Maximum	0.23	0.4	0.75	1.20	1.10	0.80	0.15	0.010	0.020	0.020	0.080

The following trace elements shall be restricted to the following maximum limits:

Copper	--	0.20
Tin	--	0.020*
Arsenic	--	0.020
Ni	--	0.20

* The elements P and Sn shall be controlled according to the formula $P+3.6XS_{n} \leq 0.055\%$

** A maximum Al-value of 0.03% is to be aimed.

10.0 TEST SAMPLES

10.1 CHEMICAL ANALYSIS:

Each melt shall be analysed for chemical composition.



CORPORATE PURCHASING SPECIFICATION

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10.2 MECHANICAL TESTS

A hardness test is to be carried out to verify the uniformity of the strength within the delivery lot (per melt and heat treatment batch). Hardness check shall be conducted on 10% of the bars or a minimum 10 numbers of bars whichever is higher. In case the lot consist of less than or equal 10 bars, then all the bars need to be checked for hardness. Mechanical properties shall be tested on hardest and softest bar.

Specimens are to be taken in longitudinal direction according to EN 10083-1. For bars with diameter (d) respectively side lengths (a, b)>100mm, the specimens shall be taken at a distance d/3 respectively a/3 and b/3 from the respective surfaces. In this case transverse specimens are also allowed.

11.0 MECHANICAL PROPERTIES

11.1 When tested in accordance with IS:1608, the test pieces shall show the following properties tensile properties at room temperature (EN 10269):

Properties	d ≤ 100	100 < d ≤ 250
Ultimate tensile strength	820–1000 N/mm ²	820–1000 N/mm ²
0.2% proof stress	660 N/mm ² (min.)	660 N/mm ² (min.)
Elongation on $5.65\sqrt{s_0}$ gauge length	15 % (min.)	15 % (min.)
Reduction in area	50% (min.)	50% (min.)
Charpy 2mm V notch (J)	40 (min.)	27 (min.)

11.2 Charpy Impact Value (V notch)

When tested in accordance with IS:1757, using a test specimen of 10 mm x 10 mm x 55 mm and having a 2 mm V notch, the materials shall show a minimum Charpy impact value (in Joules) at room temperature as mentioned in the above table. This test is applicable for Bars of sizes above 16mm only.

11.3 Hardness (Brinell) - for information only

When tested in accordance with IS: 1500, the material shall have a Brinell hardness in the range of 245 – 310 BHN.

Note: In lieu of IS:1608, IS:1757 & IS:1500, any other National or International may be used.

12.0 NON-DESTRUCTIVE TEST

12.1 Verification test of all bars.

12.2 100% Ultrasonic inspection of all bars according to EN 10308 type 1a-1c (table 1). Acceptance criteria shall be quality class 4 according to EN 10308 (table 2). In general, the decision limits for loss of back wall echo is 4 dB for all bar dimensions. Every linear or surface-like in-homogeneity larger than 10mm in any direction is not acceptable.

13.0 RETESTS

As per EN10021.

CORPORATE PURCHASING SPECIFICATION



14.0 TEST CERTIFICATE:

Three copies of test certificates in English shall be supplied unless otherwise stated in the order.

In addition the supplier shall ensure to enclose one copy of test certificate alongwith their dispatch documents to facilitate quick clearance of material.

The test certificate shall bear the following information:

BHEL references:

BHEL order No.

AA10622 (Rev.No.10):ALLOY STEEL BARS FOR HIGH TEMPERATURE BOLTS UPTO 565° C – H&T (20CrMoVTiB4 – 10)

Supplier References:

Supplier's Name

Heat or Cast No.

Process of manufacture

Identification No.

Particulars of heat treatment and Batch No.

Results of Tests:

Chemical analysis

Non-destructive tests

Mechanical properties

Results of dimensional inspection

The certificate must be signed by the Chief, Inspection Department / Chief Metallurgist of the supplier's plant.

15.0 PACKING AND MARKING

Bars shall be suitably packed to prevent corrosion and damage during transportation.

Bars over 63 mm diameter shall be individually stamped / painted on one end face with cast number and AA10622.

Bars of 63 mm diameter and less shall be bundled together and identified by means of a metal label stating the cast number and specification No. AA10622 attached to the bundle.

Each package shall, in addition bear the following information:

AA10622:Alloy steel bars for high temperature bolts up to 565 °C-H&T(20CrMoVTiB4 – 10)

BHEL Order No.

Cast / Batch No.

Identification No.

Weight.

Supplier's Name.

16.0 REFERRED STANDARD (Latest publications including amendments)

1) IS:1500

2) IS:1608

3) EN10021

4) EN 10204

5) EN 10308

6) EN10083-1

7) IS 1757



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1.5% NICKEL-CHROMIUM-MOLYBDENUM STEEL BARS - H & T

**Gr : 34 Cr Ni Mo 6
(Old Grade : 817 M40 (En24))**

1.0 GENERAL:

This specification governs the requirements of 1.5% Nickel-Chromium-Molybdenum Steel Bars in hardened and tempered condition.

2.0 APPLICATION :

For general engineering applications requiring high tensile strength combined with good ductility and resistance to shock.

3.0 CONDITION OF DELIVERY :

Hot Rolled/Forged, Hardened and Tempered.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

This specification complies with DIN EN 10083 : 1996 ; Quenched and tempered : Technical delivery conditions for special steels ; Grade 34 Cr Ni Mo 6.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes: Bars shall be supplied to the dimensions specified on the order.

5.1.1 Length: Unless otherwise specified, hot rolled bars shall be supplied in 3 to 6 metres length or in multiples with maximum 10%, shorts down to 1 metre.

Forged bars shall be supplied in lengths of 1.5 to 3.0 metres.

5.2 Tolerance:

5.2.1 Hot rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows.

Revisions:
Updated in line with EN10083-1.

Issued :
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COORDINATION DEPARTMENT**

Rev.No. 04	Amd.No.	Reaffirmed	Prepared:	Approved:	Dt.of 1st Issue
Dt. FEB. 06	Dt.	Year: 2021	STDS	SR.MGR(TS)	JAN., 1982

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<u>Diameter, mm</u>	<u>Tolerance, 8 mm</u>
50 mm to 175 mm	+ 8.0 mm
Above 175 mm	+ 12.5 mm

Note: (Hot rolled & forged bars).

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerance on each size.

6.0 MANUFACTURE:

The method of steel manufacture is left to the discretion of the manufacturer. However air or mixed air and oxygen bottom blown converter process is not acceptable. The steel shall be fully killed.

7.0 FREEDOM FROM DEFECTS:

The bars shall be free from surface and internal defects such as piping, segregation etc.

8.0 HEAT TREATMENT:

The recommended heat treatment shall be as follows:

Hardening: 830 - 860° C followed by oil quenching.

Tempering: 660° C max.

Note (1) Tempering between 280 - 500°C shall be avoided.

(2) The cooling rate between the tempering temperature and 200° C shall be such as to avoid temper embrittlement.

(3) The actual heat treatment cycle followed shall be reported in the Test certificate.

9.0 SELECTION OF TEST SAMPLES:

9.1 Chemical Analysis: Each melt shall be analysed for chemical composition.

9.2 Hardness: Hardness shall be checked for 5% of the bars of same size, melt and heat treatment batch. In any case minimum two bars shall be tested for hardness.

9.3 Mechanical Properties: One sample per lot, comprising of bars of same size, melt and heat treatment batch shall be taken for mechanical tests.

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10.0 CHEMICAL COMPOSITION:

The melt analysis of material shall be as follows:

Element		C	Si	Mn	Ni	Cr	Mo	S	P
Melt analysis	Min.	0.30	0.10	0.50	1.30	1.30	0.15	-	-
	Max.	0.38	0.40	0.80	1.70	1.70	0.30	0.035	0.035
Permissible variation in check Analysis		± 0.02	± 0.03	± 0.04	± 0.05	± 0.05	± 0.03	+ 0.005	+ 0.005

11.0 MECHANICAL PROPERTIES:

The mechanical properties shall be as follows:

Ruling Section, mm (d=dia, t=thickness)	Tensile strength N/mm ²	0.2% Proof stress, min. N/mm ²	Elongation min (L=5d)	Reduction in area % min.	Notch bar impact strength, min. (ISO -V notch)	Hardness BHN
d ≤ 16 (t ≤ 8)	1200-1400	1000	9	40	35	360-420
16 < d ≤ 40 (8 < t ≤ 20)	1100-1300	900	10	45	45	330-390
40 < d ≤ 100 (20 < t ≤ 60)	1000-1200	800	11	50	45	300-360
100 < d ≤ 160 (60 < t ≤ 100)	900-1100	700	12	55	45	270-300
160 < d ≤ 250 (100 < t ≤ 160)	800-950	600	13	55	45	240-285

NOTE: 1) The tensile test shall be carried out in accordance with IS:1608 or any other reputed national standard.

2) The charpy impact test shall be performed in accordance with IS:1757 or any other reputed national standard. The specimen size shall be 10x10x55mm with a 2 mm V-Notch.

An impact test shall consist of three specimens from a single test location, the average value of which shall be as specified above.

Only one value of the three can be below the specified minimum, but in no case below 2/3rd of the specified average value.

All the three test results shall be reported in test certificate.

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11.1 Hardness test: The hardness shall be tested in accordance with IS 1500 or any other equivalent international standard.

12.0 ULTRASONIC TEST:

Each bar above 50 mm shall be tested ultrasonically in accordance with corporate standard AA 085 01 18 to ensure freedom from internal defects. The norms of acceptance shall be as per category 2 of the above standard.

13.0 RETESTS:

13.1 If any of the test specimen fails to meet the requirements specified in cl. 11, the sample bar from which the test specimen was cut shall be rejected and two further sample bars from the same lot shall be taken for retest.

13.2 If the retests also fail, manufacturer is at liberty to reheat treat the bars in question. Not more than two reheat treatments are allowed. However, retempering is not considered as reheat treatment.

13.3 If after reheat treatment, the mechanical properties are not complied with, the entire lot shall be rejected.

14.0 INSPECTION AT SUPPLIER'S WORKS:

14.1 BHEL representative/BHEL appointed Inspection Agency shall have free entry and access to all areas where the manufacture of the bars is carried out. All reasonable facilities shall be extended to him including labour wherever necessary.

14.2 BHEL representative/BHEL appointed Inspection Agency shall be given sufficient advance intimation to witness the various processes, tests, etc. Punching and identification of test coupons and execution of various tests shall be done in presence of BHEL representative/BHEL appointed Inspection Agency.

15.0 TEST CERTIFICATE:

Five copies of the test certificate shall be supplied bearing the following details.

- BHEL Order No
- BHEL Specification No: HY 10561/ Rev. 04
- Supplier's Name:
- Identification No:
- Size
- Cast No.
- Details of Heat treatment.
- Results of Chemical analysis, mechanical tests including hardness & NDT called for in this specification.

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16.0 PACKING AND MARKING:

The bars shall be suitably packed in bundles to prevent corrosion and damage during transit.

Bars above 50mm in diameter or of equivalent cross-sectional area shall be stamped HY 10561/ Rev.04 and cast no. on the side near the end or on the end face.

A metal label shall be securely attached to each bundle and shall bear the following information for the sizes less than 50 mm diameter.

HY 105 61 Rev. 04

BHEL Order No.

Consignment or Identification No:

Cast No.

Size & Weight.

Supplier's Name.

17.0 REJECTION & REPLACEMENT:

In the event of the bar material proving defective in the course of further processing at BHEL, the same shall be rejected notwithstanding any previous acceptance.

The supplier shall replace the material forging at his own cost and the rejected bars shall be returned after all the commercial conditions are satisfied.



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1.5% NICKEL-CHROMIUM-MOLYBDENUM STEEL BARS - ANNEALED

Gr : 34 Cr Ni Mo 6

(Old Grade : 817 M40 / En24)

1.0 GENERAL:

This specification governs the requirements of 1.5% Nickel-Chromium-Molybdenum Steel Bars in annealed condition.

2.0 APPLICATION :

For general engineering applications requiring high tensile strength combined with good ductility and resistance to shock.

3.0 CONDITION OF DELIVERY :

Hot Rolled/forged, annealed..

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

This specification complies with DIN EN 10083, : 1996

Quenched and tempered steels : Technical delivery conditions for special steels Gr. 34 Cr Ni Mo 6.

5.0 DIMENSION AND TOLERANCES:

5.1 Sizes: Bars shall be supplied to the dimensions specified as per order.

5.1.1 Length: Unless otherwise specified, hot rolled bars shall be supplied in 3 to 6 metres length or in multiples with maximum 10%, shorts down to 1 metre.

Forged bars shall be supplied in lengths of 1.5 to 3.0 metres.

5.2 Tolerance:

5.2.1 Hot rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows.

Revisions:

Updated in line with EN10083-1.

Issued :

**STANDARDS ENGINEERING & IPR
COORDINATION DEPARTMENT**

Rev. No. 03	Amd.No.	Reaffirmed	Prepared: MANAGER (MATLS.ENGG)	Approved:	Dt.of 1 st Issue
Dt. FEB. 06	Dt.	Year: 2021		AGM (E&CC)	FEB.93

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<u>Diameter, mm</u>	<u>Tolerance, mm</u>
50 mm to 175 mm	+ 8.0 mm
Above 175 mm	+ 12.5 mm

Note: (Hot rolled & forged bars).
Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerance on each size.

6.0 MANUFACTURE:

The method of steel manufacture is left to the discretion of the manufacturer. However air or mixed air and oxygen bottom blown converter process is not acceptable. The steel shall be fully killed.

7.0 FREEDOM FROM DEFECTS:

The bars shall be free from surface and internal defects such as piping, segregation etc.

8.0 HEAT TREATMENT:

8.1 The bars shall be soft annealed by heating to 650-700° C and cooled in the furnace.

8.2 The recommended heat treatment for sample test pieces shall be as follows:

Hardening: 830 - 860° C followed by oil quenching.

Tempering: 660° C max.

Note (1) Tempering between 280 - 500°C shall be avoided.

Note (2) The cooling rate between the tempering temperature and 200° C shall be such as to avoid temper embrittlement.

Note (3) The actual heat treatment cycle followed shall be reported in the test certificate.

9.0 SELECTION OF TEST SAMPLES:

9.1 Chemical Analysis: One sample from each melt shall be analysed for chemical composition.

9.2 Mechanical Properties:

9.2.1 Mechanical Properties: One sample per melt per heat treatment batch of same size shall be tested for mechanical properties after heat treatment as per clause 8.2.

For sizes beyond 250mm diameter, test samples shall be forged to dia 250mm, heat treated as per c1.8.2 and shall be tested for mechanical properties.

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9.2.2 Hardness Test: 5% of the bars or minimum 2 bars in soft annealed condition shall be tested for Brinell Hardness test.

10.0 CHEMICAL COMPOSITION:

The melt analysis of material shall be as follows:

Element		C	Si	Mn	Ni	Cr	Mo	S	P
Melt analysis	Min.	0.30	0.10	0.50	1.30	1.30	0.15	-	-
	Max.	0.38	0.40	0.80	1.70	1.70	0.30	0.035	0.035
Permissible in variation check analysis		± 0.02	± 0.03	± 0.04	± 0.05	± 0.05	± 0.03	+ 0.005	+ 0.005

11.0 MECHANICAL PROPERTIES:

The mechanical properties shall be as follows:

Ruling Section, mm (d=dia, t=thickness)	Tensile strength N/mm ²	0.2% Proof stress, min. N/mm ²	Elongation min (L=5d)	Reduction in area % min.	Notch bar impact strength, min. (ISO -V notch)	Hardness BHN
d ≤ 16 (t ≤ 8)	1200-1400	1000	9	40	35	360-420
16 < d ≤ 40 (8 < t ≤ 20)	1100-1300	900	10	45	45	330-390
40 < d ≤ 100 (20 < t ≤ 60)	1000-1200	800	11	50	45	300-360
100 < d ≤ 160 (60 < t ≤ 100)	900-1100	700	12	55	45	270-300
160 < d ≤ 250 (100 < t ≤ 160)	800-950	600	13	55	45	240-285

NOTE: 1) The tensile test shall be carried out in accordance with IS:1608 or any reputed national standard.

2) The charpy impact test shall be performed in accordance with IS:1757 or any reputed National Standard. The specimen size shall be 10x10x55mm with a 2 mm V-Notch.

An impact test shall consist of three specimens from a single test location, the average value of which shall be as specified above.

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Only one value of the three can be below the specified minimum, but in no case below 2/3 of the specified average value.

All the three test results shall be reported in test certificate.

11.1 Hardness Test: Shall be tested for Brinell Hardness in accordance with IS:1500 or any other equivalent national standard and the value shall be 248 BHN max. (Applicable for annealed material). Hardness values shall also be reported for the test samples heat treated as per clause 8.2 and the hardness values shall be as per table given at Cl.No. 11.0.

12.0 ULTRASONIC TEST:

Each bar above 50 mm shall be tested ultrasonically in accordance with corporate standard AA 085 01 18 to ensure freedom from internal defects. The norms of acceptance shall be as per category 2 of the above standard.

13.0 INSPECTION AT SUPPLIER'S WORKS:

13.1 BHEL representative/BHEL appointed Inspection Agency shall have free entry and access to all areas where the manufacture of the bars is carried out. All reasonable facilities shall be extended to him including labour wherever necessary.

13.2 BHEL representative/BHEL appointed Inspection Agency shall be given sufficient advance intimation to witness the various processes, tests, etc. punching and identification of test coupons and execution of various tests shall be done in presence of BHEL representative/BHEL appointed Inspection Agency.

14.0 TEST CERTIFICATES:

Five copies of test certificate shall be supplied bearing the following details.

- BHEL Order No
- BHEL Specification No: HY 10563 Rev. 03
- Supplier's Name:
- Identification No:
- Size
- Cast No.
- Details of Heat treatment.
- Results of Chemical analysis, mechanical tests including hardness and NDT called for in this specification.



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15.0 PACKING AND MARKING:

The bars shall be suitably packed in bundles to prevent corrosion and damage during transit.

Bars above 50mm in diameter or of equivalent cross-sectional area shall be stamped HY10563 Rev.03 and cast no. on the side near the end or on the end face.

A metal label shall be securely attached to each bundle and shall bear the following information for bars below 50 mm.

HY 10563 Rev. 03

BHEL Order No.

Consignment or Identification No:

Cast No.

Size & Weight.

Supplier's Name.

16.0 REJECTION AND REPLACEMENT:

In the event of the bar material proving defective in the course of further processing at BHEL, the same shall be rejected notwithstanding any previous acceptance.

The supplier shall replace the material forging at his own cost and the rejected bars shall be returned after all the commercial conditions are satisfied.

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1% CHROMIUM CASE HARDENING STEEL BARS, ANNEALED

(GR : 16 Mn Cr 5)

1.0 GENERAL:

This specification governs the requirements of 1% chromium case hardening bars.

2.0 APPLICATION :

For the manufacture of case hardened components.

3.0 CONDITION OF DELIVERY :

The bars shall be supplied in the hot / cold rolled/ forged and Annealed condition

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

This specification complies with EN10084-1998 : Case hardening steels.

Gr : 16 Mn Cr5

5.0 DIMENSIONS AND TOLERANCES:

5.1 Dimensions : As specified in the order. Unless otherwise specified, the hot/cold rolled bars shall be supplied in random lengths of 3 to 6 meters. Forged bars shall be supplied in lengths of 1.5 to 3.0 metres.

5.2 Tolerance:

5.2.1 Rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows.

Diameter, mmTolerance, mm

50 mm to 175 mm

+ 8.0 mm

Above 175 mm

+ 12.5 mm

Note: (Hot rolled & forged bars).

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerance on each size.

Revisions:

Revised in line with EN10084 (latest version).

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MANAGER,**Approved:****Dt.of 1st Issue****Dt. FEB. 06****Dt.****Year: 2021**

MATLS ENGG

GM (ENGG)

JAN., 1984

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**6.0 MANUFACTURE:**

The method of steel manufacture is left to the discretion of the manufacturer. However, air or mixed air and oxygen bottom blown converter process is not acceptable. The steel shall be fully killed.

7.0 FREEDOM FROM DEFECTS:

The bars shall be free from surface and internal defects such as piping, segregation etc.

8.0 HEAT TREATMENT:

8.1 The bars shall be soft annealed at 650 - 700° C and furnace cooled.

8.2 The recommended heat treatment for sample test pieces shall be as follows:
Blank Carburize at 880 - 980° C, followed by air cooling.
Hardening : At 860 - 900° C followed by quench in oil or water.

The tempering temperature shall be 150 - 200 ° C. The actual heat treatment cycle followed shall be reported in the Test certificate.

9. SELECTION OF TEST SAMPLES:

9.1 **Chemical Analysis:** Each melt shall be analysed for chemical composition

9.2 **Mechanical Properties :** One sample per melt per size shall be tested for mechanical properties after heat treatment as per clause 8.2. For the bars beyond 250 mm diameter, the test samples shall be forged to dia 250 mm then tested for mechanical properties after heat treatment as per clause 8.2.

9.3 **Metallography tests :** One sample per melt per size shall be tested for metallography tests.

10.0 CHEMICAL COMPOSITION:

The melt analysis of the material shall be as follows:

Element		C	Si	Mn	Cr	P	S
Melt analysis	Min. %	0.14	--	1.00	0.80	--	-
	Max. %	0.19	0.40	1.30	1.10	0.035	0.035
Permissible variation in product analysis		± 0.02	+0.03	±0.05	±0.05	+0.005	+0.005

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11.0 MECHANICAL PROPERTIES:

11.1 Tensile: The mechanical properties of the hardened and tempered test bars of ruling section 30 mm shall be as follows:

Tensile Strength N/mm ²	0.2% Proof Stress min. N/mm ²	% Elongation min. (l = 5 d)
780 - 1080	590	10

11.2 Hardness: 5 % of the bars or minimum 2 numbers, in annealed condition shall be tested for Brinell Hardness and the value shall be 207 BHN max.

12.0 METALLOGRAPHY TEST :

12.1 Grain size : Grain size shall be 5 or finer when tested in accordance with ASTM E 112.

12.2 Cleanliness Rating : Inclusion content shall be tested as per ASTM E 45 and inclusion rating for all types shall not be more than 2.0 (thin series) and 1.5 (thick series). The inclusion of all types i.e. A, B, C & D may exist simultaneously.

13.0 ULTRASONIC TESTING :

Each bar above 50 mm dia/size shall be tested ultrasonically in accordance with corporate standard AA0850118 to ensure freedom from internal defects. The norms of acceptance shall be as per category 2 of the above standard.

14.0 INSPECTION AT SUPPLIER'S WORKS:

BHEL representative/BHEL appointed Inspection Agency shall have free entry and access to all areas where the manufacture of the bars is carried out. All reasonable facilities shall be extended to him including labour wherever necessary.

BHEL representative/BHEL appointed Inspection Agency shall be given sufficient advance intimation to witness the various processes, tests, etc. punching and identification of test coupons and execution of various tests shall be done in presence of BHEL representative/BHEL appointed Inspection Agency.

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15.0 TEST CERTIFICATES:

Three copies of test certificates shall be supplied bearing the following details:

- a) BHEL Order No.
- b) BHEL Specification No: HY 10565 / Rev. 03
- c) Supplier's name:
- d) Identification No.
- e) Size:
- f) Cast No.
- g) Details of heat treatment carried out on material and test samples.
- h) Results of chemicals analysis and mechanical tests including hardness tests called for in this specification.
- i) Results of ultrasonic tests and metallography tests.

16.0 PACKING AND MARKING:

The bars shall be suitably packed in bundles to prevent corrosion and damage during transit.

Bars above 50mm in diameter or of equivalent cross-sectional area shall be stamped HY10565 and Cast No. on the side near the end or on the end face.

A metal lable shall be securely attached to each bundle and shall bear the following information for bars of diameters less than 50 mm.

HY 105 65/Rev. 03
 BHEL Order No.
 Consignment or Identification No:
 Cast No.
 Size & Weight.
 Supplier's Name.

17.0 REJECTION AND REPLACEMENT:

In the event of the bar material proving defective in the course of further processing at BHEL, the same shall be rejected notwithstanding any previous acceptance.

The supplier shall replace the material forging at his own cost and the rejected bars shall be returned after all the commercial conditions are satisfied.

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ALLOY STEEL BARS FOR LOW TEMPERATURE SERVICE – H & T
(GR: L43/AISI 4340)**1.0 GENERAL:**

This specification governs the quality requirements of alloy steel bars of grade L43 or AISI 4340 for low temperature service, covering sizes upto 100mm only.

2.0 APPLICATION:

For stay bolts, cap nuts and studs for centrifugal compressor etc. required for low temperature service, upto - 101° C.

3.0 CONDITION OF DELIVERY:

Cold/Hot rolled, hardened and tempered condition and stress relieved condition. The surface condition of the material shall be suitable for carrying out Ultrasonic testing (for bars of dia. 40mm and above) in the dispatch condition.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

This specification complies in general with latest version of ASTM A 320-22 Grade L43, with the following additional requirements.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Dimensions: The sizes shall be as specified in the order. Unless otherwise specified, the bars shall be supplied in random lengths of 3 to 5 metres.

5.2 Tolerances:

5.2.1 The tolerances on rolled bars shall be as given below:

Size (mm)		Tolerance (mm)
Over	Upto & including	
-	25	± 0.50
25	50	± 0.75
50	80	± 1.00
80	100	± 1.25
100	120	± 1.50

Revisions: Revised Cl. No. 1.0, 4.0, 6.0, 7.1, 7.2, 10.2, 11.0, 12.0, 13, 14, 15.0, 18.1

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Rev.No.02**Amd.No.****Reaffirmed.****Prepared:**
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Comp. Engg.**Approved:**
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Oct.92

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6.0 MANUFACTURE:

The steel shall be produced by the electric furnace process or by the basic oxygen process or by an equivalent recognized process. The steel shall be fully killed. The steel shall be further refined / processed by VD/VCD or any other better method of refining so as to minimize the inclusion contents, trace elements etc. to achieve impact strength at -101°C. Only ingot cast steel shall be used for the supply of the hot rolled / hot wrought bars (forged) as per this specification.

7.0 HEAT TREATMENT:

7.1 The recommended heat treatment cycle shall be as follows:

Hardening : Heating to 820-850° C (soak for sufficient time), followed by oil quenching.

Tempering: Not below 593° C followed by air cooling.

The actual heat treatment cycle followed shall be reported in test certificate.

7.2 If the bars need be straightened after heat treatment, the bars shall be stress relieved, after straightening operation, at 55° C below the actual tempering temperature.

8.0 FREEDOM FROM DEFECTS:

The bars shall be free from cracks, scabs, laminations, and other harmful defects.

9.0 FINISH:

9.1 The surface of the bars shall be smooth without any laps, rolled in scales etc. Dents, roll marks and scratches are permitted provided their depth does not exceed half the tolerance limits.

9.2 The edges of bars shall be cut square by sawing or shearing and no crop ends shall be permissible.

10.0 SELECTION OF TEST SAMPLES:

10.1 Chemical Analysis:

Each melt shall be analyzed for chemical composition.

10.2 Mechanical Tests:

Two samples per lot, comprising of same size, melt and heat treatment batch shall be taken for mechanical tests using the following selection criteria. 10% of the bars in a lot or minimum 10 bars shall be tested for hardness in final treated condition of the material. The hardest and the softest bar from the lot shall be subjected to all mechanical tests as specified in Cl. 12.0 of this specification.

11.0 CHEMICAL COMPOSITION:

The melt analysis of the material shall be as follows:

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Element		C	Si	Mn	Cr	Mo	Ni	S	P
Melt Analysis	Min. %	0.38	0.15	0.60	0.70	0.20	1.65	-	-
	Max. %	0.43	0.35	0.85	0.90	0.30	2.00	0.025	0.025
Product Variation %		± 0.02	±0.02	±0.03	±0.03	±0.02	±0.05	+0.005	+0.005

NOTE: The 'S' and 'P' contents are specific BHEL product requirements to ensure low temperature impact strength at -101°C.

12.0 MECHANICAL PROPERTIES

The material shall meet the following requirements in the final dispatch condition of the material as given below:

Tensile Strength N/mm ² min.	0.2% Proof Stress N/mm ² min.	% Elongation L=50mm min.	% Reduction in Area of Cross Section min.	Impact Strength (ISO-V) at - 101° C Joules min.	Hardness BHN average
860	725	16	50	27	270-320

NOTE: 1) The tensile test shall be carried out according to ASTM A370 or any reputed National Standard.

- The charpy impact test shall be carried out according to ASTM A370 or any reputed National Standard. The test shall be performed on ISO-specimen of size 10 x 10 x 55 mm with a 2 mm V notch. The longitudinal axis of the specimen shall be parallel to the direction of rolling/working. The notch shall be perpendicular to the longitudinal axis of the bar.
- The minimum impact value specified above is the average of 3 specimens from a single location. Only one value of the three can be below specified minimum, but in no case below 20 J. All the three values shall be reported.

13.0 METALLOGRAPHIC TESTS:

13.1 Non- Metallic Inclusions: The sample for testing shall be taken on a longitudinal plane, located midway between the centre and the surface of the bar. The rating of inclusions shall be based upon average length of inclusion, the longest inclusion and the general background. When tested as per ASTM E45, plate III, the inclusion rating should not exceed the following norms:

- 'A' Sulphide type: Thin series 2.
- 'B' or 'D' Oxide: Thin series 2.
- 'C' Silicate type: Thin series 2.

However, any one of the above can be allowed upto 2.5 provided the remaining inclusions do not exceed 2.

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14.0 NON DESTRUCTIVE TEST (ULTRASONIC TEST):

- 14.1 All the bars of diameter 40mm and above shall be ultrasonically tested according to EN 10228-3 standard. The acceptance criteria is given below.
- 14.2 The following indications are not permissible.
- 14.2.1 Individual indications scattered at random with an equivalent flaw size $\geq 2\text{mm } \phi$.
- 14.2.2 All individual indications with more than 10% loss in back echoes.
- 14.2.3 All the indication linear or globular forming cluster, with an extension greater than 10 mm in any direction.
- 14.2.4 Local accumulation of indications with an equivalent flaw size $\geq 1\text{mm } \phi$.

15.0 POSITIVE MATERIAL IDENTIFICATION:

All bars shall be checked (in dispatch condition) for ascertaining the correct grade of material as per this specification by PMI using a suitable instrument. A report on PMI test shall also be submitted.

16.0 RETESTS:

- 16.1 If any of the test specimen fails to meet the requirements specified in cl.12, the sample bar from which the test specimen was cut shall be rejected and two further sample bars from the same lot shall be taken for retest.
- 16.2 If the retests also fail, manufacturer is at liberty to reheat treat the bars in question. Not more than two reheat treatments are allowed. However, re-tempering is not considered as reheat treatment.
- 16.3 If after reheat treatment, the mechanical properties are not complied with, the entire lot shall be rejected.

17.0 INSPECTION AT SUPPLIER'S WORKS:

The representative of BHEL shall have free access to the supplier's works at all times during the execution of the order, to satisfy himself that the material is produced as per the quality requirements of this specification. All reasonable facilities shall be extended to him, free of charge. He may also witness the sampling, testing and marking called for in this specification.



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18.0 TEST CERTIFICATES:

Test certificates shall be supplied giving the following details:

- a) BHEL Specification No: HY 10566 Rev.02
- b) Material Grade: L43
- c) BHEL Order No.
- d) Name of the supplier
- e) Size
- f) Melt No.
- g) Process of manufacture (Vacuum degassing & Hot/cold rolled, as applicable)
- h) Heat Treatment details and batch No. and HT charts.
- i) Results of chemicals analysis and mechanical tests (including hardness test results).
- j) Results of Metallographic tests
- k) Results of Ultrasonic Tests.
- l) Dimensional inspection report.
- m) Confirmation of 'Material identity test' on all bars.
- n) Results of any additional test (if applicable as per order)

19.0 PACKING AND MARKING:

19.1 Marking: All bars with cross sectional dimension 40mm and above shall be stamped with the melt number, specification number and supplier's trade mark on both the end faces of the bars.

Bars of sectional dimension below 40mm shall be bundled as per each size and a metal label bearing the following information shall be securely attached to each bundle.

- a) BHEL Specification No. HY 10566
- b) BHEL Order No.
- c) Melt No. & Heat Treatment Batch No.
- d) Size & Weight
- e) Supplier's trade mark.

19.2 Packing: The bars shall be suitably packed to prevent corrosion and damage during transit.

20.0 REJECTION AND REPLACEMENT:

In the event of the bar material proving defective in the course of further processing at BHEL, the same shall be rejected notwithstanding any previous acceptance.

The supplier shall replace the material forging at his own cost and the rejected bars shall be returned after all the commercial conditions are satisfied.



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ALLOY STEEL BARS FOR HIGH TEMPERATURE SERVICE – H & T
(GR: 25 Cr Mo 4)

1.0 GENERAL:

This specification governs the quality requirements of alloy steel bars of grade 25 Cr Mo 4 in hardened and tempered condition.

2.0 APPLICATION :

For the manufacture of high temperature fasteners for steam turbines.

3.0 CONDITION OF DELIVERY :

The bars shall be supplied in hot rolled/forged and hardened and tempered condition.

4.0 COMPLIANCE WITH STANDARDS:

The material shall comply with DIN: 10269-1999 GR: 25 Cr Mo 4 : Heat resisting and highly heat resisting materials for bolts and nuts with the following additional / specific requirements.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Dimensions: The sizes shall be as specified in the order. Unless otherwise specified, the bars shall be supplied in random lengths of 3 to 6 metres or in multiples with maximum of 10% shorts down to 1 metre.

Forged bars shall be supplied in lengths of 1.5 to 3.0 metres.

5.2 Tolerance:

5.2.1 Hot rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows:

Revisions: Modified Cl. 5.0, 6.0, 10.0.			Issued : STANDARDS ENGINEERING & IPR COORDINATION DEPARTMENT		
Rev.No. 05	Amd. No.	Reaffirmed	Prepared: STDS.ENGG., MATLS.ENGG.	Approved: AGM (ENGG.)	Dt.of 1st Issue
Dt. FEB. 2006	Dt.	Year: 2021			JUL. 1982

<u>Diameter, mm</u>	<u>Tolerance, mm</u>
> 50 to 125	+ 6.0
>125 to 175	+ 8.0
>175 ---	+ 12.5

Note: (FOR HOT ROLLED & FORGED BARS)

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerances on each size.

6.0 MANUFACTURE:

Steel shall be made by basic electric process and subsequently vacuum degassed. If any other process is employed, it shall be to mutual agreement between the supplier and BHEL.

Note: Raw material like ingots/blooms/billets required for forgings should be procured from BHEL approved sources alongwith test certificate.

7.0 HEAT TREATMENT:

7.1 The heat treatment cycle shall be as follows:

Hardening at 840-880°C Cool in oil or water.

Tempering at 540°C-680°C for min. 2 hrs and cool in air slowly to minimize residual stresses.

7.2 If the bars need be straightened after heat treatment, the bars shall be stress relieved, after straightening operation, at 30°C below the actual tempering temperature.

The actual heat treatment cycle followed shall be reported in test certificate.

8.0 FREEDOM FROM DEFECTS:

The bars shall be straight, sound and free from internal and surface defects viz., cracks, piping, scabs, laps, hairline cracks etc. The bars shall be free from twists and bends.

9.0 FINISH:

9.1 The surface of the bars shall be smooth without any laps, rolled in scales etc. Dents, roll marks and scratches are permitted provided their depth does not exceed half the tolerance limits specified in Cl.5.0.

9.2 The edges of bars shall be cut square by sawing or shearing and no crop ends shall be permissible.

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10.0 SELECTION OF TEST SAMPLES:**10.1 Chemical Analysis:** Each melt shall be analysed for chemical composition.**10.2 Mechanical Tests:**

One sample per lot, comprising of bars of same size, melt and heat treatment batch shall be taken for mechanical testing. For bars of diameter more than 160 mm the supplier has the option of reducing the diameter to 160 mm by forging or machining and then test it as per Cl. 12.0 of this specification to achieve the required properties of 160 mm dia. ruling section.

11.0 CHEMICAL COMPOSITION:

The chemical analysis of the material shall be as follows:

Element (%)		C	Si	Mn	Cr	Mo	P	S
Melt Analysis	min .	0.22	--	0.60	0.90	0.15	-	-
	max.	0.29	0.40	0.90	1.20	0.30	0.035	0.035
Permissible variation in product Analysis		± 0.02	±0.03	±0.04	±0.05	±0.04	+0.005	+0.005

12.0 MECHANICAL PROPERTIES

The Mechanical properties of the material shall be as follows:

Specimen	Limiting ruling Section (mm)	Tensile Strength N/mm ²	0.2% Proof stress, min N/mm ²	Elongation % min (l=5d)	Reduction in area % min	Impact strength, min (ISO-V Specimen) J
Longitudinal	≤ 100	600-750	440	18	60	60
	> 100 ≤ 160		420			45

NOTE: 1) The tensile test shall be carried out according to IS:1608 or any reputed National Standard.

2) The charpy impact test shall be carried out according to IS:1757, or any reputed National Standard. The test shall be performed on ISO - V Specimen of size 10x10x55mm with a 2 mm V-Notch.

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The minimum impact value specified above is the average of 3 specimens from a single location. Only one value of the three can be below the specified minimum, but in no case below 2/3rd of the same. All the three values shall be reported.

13.0 RETESTS:

- 13.1** If any of the test specimen fails to meet the requirements specified in cl 12, the sample bar from which the test specimen was cut shall be rejected and two further sample bars from the same lot shall be taken for retest.
- 13.2** If the retests also fail, manufacturer is at liberty to heat-treat the bars in question. However, not more than two re-heat treatments are allowed. Re-tempering is not considered as reheat treatment.
- 13.3** If after re-heat treatment, the mechanical properties are not complied with, the entire lot shall be rejected.

14.0 ULTRASONIC TEST:

All bars above 50mm dia shall be ultrasonically tested according to the latest ASTM:A388 (BHEL Standard AA0850118), to ensure freedom from defects.

The following defects (Category 2 of AA0850118) shall be unacceptable.

- i) Cracks, flacks, seams and laps.
- ii) Defects giving indications larger than that from a 4mm diameter equivalent flaw.
- iii) Groups of defects with maximum indication less than that from a 4mm diameter equivalent flaw which can not be separated at testing sensitivity if the back echo is reduced to less than 50%.
- iv) Defects giving indications of 2 to 4mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.

15.0 INSPECTION AT SUPPLIER'S WORKS:

The representative of BHEL shall have free access to the supplier's works at all times during the execution of the order, to satisfy himself that the material is produced as per the quality requirements of this specification. All reasonable facilities shall be extended to him, free of charge. He may also witness the sampling, testing and marking called for in this specification.



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16.0 TEST CERTIFICATES:

16.1 Five copies of the test certificate shall be furnished giving the following details.

- a) Specification No: HY 10663 / Rev. 05
- b) BHEL order No
- c) Size
- d) Name of the Supplier
- e) Process of steel manufacture & bars.
- f) Melt No.
- g) Heat Treatment details and batch No.
- h) Results of chemical analysis and mechanical tests.
- i) Results of ultrasonic tests.

16.2 The test certificate shall be signed by the chief of Quality/Chief Metallurgist of the supplier and BHEL representative.

17.0 PACKING AND MARKING:

17.1 Marking: All bars with cross-sectional dimension greater than 50mm shall be stamped with the melt number, specification number and supplier's trade mark on both the end faces of the bars.

Bars of sectional dimension 50mm and below shall be bundled as per each size and metal label bearing the following information shall be securely attached to each bundle.

- a) BHEL Specification No. HY 10663
- b) BHEL Order No.
- c) Melt No. & Heat Treatment batch No.
- d) Size & Weight
- e) Supplier's trade mark.

17.2 Packing: The bars shall be suitably packed to prevent corrosion and damage during transit.

18.0 REJECTION:

In the event of any material proving defective during the course of further processing or testing, such material shall be rejected and the supplier shall make immediate arrangements to replace the same free of cost.

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ALLOY STEEL BARS - QUENCHED & TEMPERED**(GR: 42 Cr Mo 4)****1.0 GENERAL:**

This specification governs the requirements of alloy steel bars of grade 42 Cr Mo 4 in quenched and tempered condition.

2.0 APPLICATION :

For the manufacture of high tensile and high temperature fasteners and other components requiring high tensile strength coupled with good ductility and resistance to shock and wear.

3.0 CONDITIONS OF DELIVERY :

The bars shall be supplied in hot rolled / forged and quenched and tempered condition.

4.0 COMPLIANCE WITH STANDARDS:

This specification complies in general with DIN EN 10083 / 1996, Grade : 42 Cr Mo4.

5.0 DIMENSIONS AND TOLERANCES:

5.1 Dimensions : The sizes shall be as specified in the order. Unless otherwise specified, the bars shall be supplied in random lengths of 3 to 5 metres.

5.2 Tolerance:

5.2.1 Hot rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows.

<u>Diameter, mm</u>	<u>Tolerance, mm</u>
50 mm to 175 mm	+ 8.0 mm
Above 175 mm	+ 12.5 mm

Revisions:

Modified clause 16.0 to add the results of hardness & NDT tests in test certificate.

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Prepared:
Standards,
Matls. Engg.

Approved:

AGM (Engg.)

Date of 1st issue:

Dt. FEB. 06

Dt.

Year: 2021

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Note: (Hot rolled & forged bars).

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerance on each size.

6.0 MANUFACTURE:

Method of steel manufacture shall be at the manufacturer's discretion. The steel shall be fully killed.

7.0 HEAT TREATMENT:

7.1 The recommended heat treatment cycle shall be as follows:

Hardening : 820° - 860° C followed by water/ oil quenching.

Tempering at 540° - 680° C followed by Air cooling.

The actual heat treatment cycle followed shall be reported in Test Certificate.

7.2 If the bars need to be straightened after heat treatment, the bars shall be stress relieved, after straightening operation, at 30° C below the actual tempering temperature.

8.0 FREEDOM FROM DEFECTS:

The bars shall be free from Cracks, Scabs, laminations, and other harmful defects.

9.0 FINISH:

9.1 The surface of the bars shall be smooth without any laps, rolled in scales etc., Dents, roll marks and scratches are permitted provided their depth does not exceed half the tolerance limits .

9.2 The edges of bars shall be cut square by sawing or shearing and no crop ends shall be permissible.

10.0 CHEMICAL COMPOSITION:

The melt analysis of the material shall be as follows:

Element		C	Si	Mn	Cr	Mo	P	S
Melt Analysis	Min .	0.38	-	0.60	0.90	0.15	-	-
	Max.	0.45	0.40	0.90	1.20	0.30	0.035	0.035
Permissible variation in product analysis		± 0.02	+ 0.03	± 0.04	± 0.05	± 0.03	+ 0.005	+ 0.005

Note : Ni addition upto 0.50% is permitted for improving impact properties.

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11.0 SELECTION OF TEST SAMPLES:**11.1 Chemical Analysis:** Each melt shall be analysed for chemical composition.**11.2 Mechanical Tests:****11.2.1** One sample per lot, comprising of bars of same size, melt and heat treatment batch shall be taken for mechanical testing.**11.3 Hardness:** Hardness shall be checked for 5% of the bars of same size, melt and heat treatment batch. In any case minimum two bars shall be tested for hardness.**12.0 MECHANICAL PROPERTIES :**

The Mechanical properties of the material shall be as follows. For the size ranges upto 160 mm dia the properties given are for longitudinal specimen. For the size range 160 - 250, the properties for both longitudinal and transverse direction are given.

Ruling Section, mm	Tensile Strength N/mm ²	0.2% proof stress, min. N / mm ²	Elongation min. L = 5d	Reduction in area % min.	Notched bar impact strength min. (ISO - V notch) J	Hardness, BHN
Upto 16	1100-1300	900	10	40	--	315 - 375
>16 ≤40	1000-1200	750	11	45	25	285 - 335
>40 ≤100	900-1100	650	12	50	25	245 - 315
>100 ≤160	800-950	550	13	50	25	225 - 275
>160 ≤250 (L)	750-900	500	14	55	25	215 - 245
>160 ≤250 (T)	750-900	500	12	--	27 (DVM 3 mm - U notch)	215 - 245

NOTE: 1) The tensile test shall be carried out according to IS:1608 or any reputed national standard.

2) The charpy impact test shall be carried out according to IS:1757 or any reputed National Standard. The test shall be performed on ISO - Specimen of size 10x10x55mm with a 2 mm V-Notch.

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- 3) The minimum impact value specified above is the average of 3 specimens from a single location. Only one value of the three can be below the specified minimum, but in no case below 2/3rd of the same. All the three values shall be reported.
- 4) The hardness shall be tested in accordance with IS 1500 or any other equivalent international standard.

13.0 RETESTS:

- 13.1 If any of the test specimen fails to meet the requirements specified in cl.12, the sample bar from which the test specimen was cut shall be rejected and two further sample bars from the same lot shall be taken for retest
- 13.2 If the retests also fail, manufacturer is at liberty to reheat treat the bars in question. Not more than two reheat treatments are allowed. However, retempering is not considered as reheat treatment.
- 13.3 If after reheat treatment, the mechanical properties are not complied with, the entire lot shall be rejected.

14.0 ULTRASONIC TEST:

All bars above 50 mm dia/side shall be ultrasonically tested according to ASTM:A388 (BHEL Standard AA0850118), to ensure freedom from defects.

The following defects (Category 2 of AA 0850118) shall be unacceptable.

- i) Cracks, flacks, seams and laps.
- ii) Defects giving indications larger than that from a 4mm diameter equivalent flaw.
- iii) Groups of defects with maximum indication less than that from a 4mm diameter equivalent flaw which can not be separated at testing sensitivity if the back echo is reduced to less than 50%.
- iv) Defects giving indications of 2 to 4mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.

15.0 INSPECTION AT SUPPLIER'S WORKS:

The representative of BHEL shall have free access to the supplier's works at all times during the execution of the order, to satisfy himself that the material is produced as per the quality requirements of this specification. All reasonable facilities shall be extended to him, free of charge. He may also witness the sampling, testing and marking called for in this specification.



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16.0 TEST CERTIFICATES:

16.1 Five copies of the test certificate shall be furnished giving the following details.

- a) Specification No. HY10664 Rev. 06
- b) Material Grade : 42 Cr Mo 4
- c) BHEL Order No.
- d) Size
- e) Melt No.
- f) Process of manufacture
- g) Heat Treatment details and batch No.
- h) Results of chemicals analysis and mechanical properties.
- i) Results of hardness test.
- j) NDT tests (if applicable).

17.0 PACKING AND MARKING:

17.1 Marking: All bars with cross sectional dimension greater than 50 mm shall be stamped with the melt number, specification number and supplier's trade mark on both the end faces of the bars.

Bars of sectional dimension 50 mm and below shall be bundled as per each size and a metal label bearing the following information shall be securely attached to each bundle.

- a) BHEL Specification No. HY10664 Rev .06
- b) BHEL Order No.
- c) Melt No. & Heat Treatment batch No.
- d) Size & Weight
- e) Supplier's trade mark.

17.2 Packing: The bars shall be suitably packed to prevent corrosion and damage during transit.

18.0 REJECTION AND REPLACEMENT:

In the event of the bar material proving defective in the course of further processing at BHEL, the same shall be rejected notwithstanding any previous acceptance.

The supplier shall replace the material forging at his own cost and the rejected bars shall be returned after all the commercial conditions are satisfied.

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**BOLTING STEEL BARS FOR HIGH TEMPERATURE SERVICE – H & T
(Gr.:21CrMoV57)****1.0 GENERAL:**

This specification governs the quality requirements of 21CrMoV57 bolting steel bars in hardened and tempered condition upto 600 mm diameter / size.

2.0 APPLICATION:

For the manufacture of steam turbine bolts, nuts, studs, spindles, bushes and other components operating in the temperature range of 300 - 540° C.

3.0 CONDITION OF DELIVERY:

Hot rolled/forged and hardened and tempered.

The bars shall be supplied with ends square and true. The bars shall be supplied in straight lengths without twists and bends.

4.0 COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply, in general, with the requirements of the following national standard and also meets the requirements of this specification.

DIN EN 10269-1999: Steels and nickel alloys for fasteners with specified elevated and/or Gr. 21 Cr Mo V 57 : low temperature properties.

5.0 DIMENSIONS AND TOLERANCES:**5.1 Sizes:**

Bars shall be supplied to the dimensions specified in BHEL order.

5.1.1 Length:

Unless otherwise specified, hot rolled bars shall be supplied in 3 to 6 metres length or in multiples with maximum of 10 per cent, shorts down to 1 metre.

Forged bars shall be supplied in lengths of 1.5 to 3 metres.

Revisions: Revised to bring inline with CPS AA10620 and EN10269.

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Rev. No. 03**Amd. No.****Reaffirmed:****Prepared:
STANDARDS
ENGG.****Approved:****AGM (G)****Date of 1st issue:****Dt. DEC. 2005****Dt.****Year: 2021****JULY, 1985**

5.2 Tolerance:

5.2.1 Hot rolled bars:

The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars:

The tolerance on the forged bars shall be as follows:

<u>Diameter, mm</u>	<u>Tolerance, mm</u>
50 to 125	+ 6.0
125 to 175	+ 8.0
175 ---	+ 12.5

Note: (FOR HOT ROLLED & FORGED BARS)

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerances on each size.

6.0 MANUFACTURE:

Steel shall be made by basic electric process and subsequently vacuum degaussed. If any other process is employed, it shall be to mutual agreement between the supplier and BHEL.

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

7.0 HEAT TREATMENT:

7.1 The bars shall be heat treated to get the mechanical properties specified as per clause 12.0.

7.2 Following heat treatment is suggested:

Harden at 900-950°C
 Temper at 680 - 720°C, minimum 2 hours.
 Hardening above 950°C and tempering below 680°C shall not be done to avoid embrittlement.

7.3 The temperature shall be uniform all over the cross section. Minimum possible residual stresses shall be aimed with slow cooling and longer duration in tempering treatment.

7.4 If the bars need straightening after heat treatment, the straightening operation shall be followed by stress relief annealing at 30°C below the tempering temperature with slow cooling after the total straightening process.

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8.0 FREEDOM FROM DEFECTS:

The bars shall be straight, sound and free from internal and surface defects viz., cracks, piping, scabs, laps, hairline cracks, etc. The bars shall be free from twists and bends.

9.0 FINISH:

9.1 The surface of the bars shall be smooth without any laps, rolled in scales, etc. Dents, roll marks and scratches are permitted provided their depth does not exceed half the tolerance limits specified in clause 5.0.

9.2 The edges of bars shall be cut square by sawing or shearing and no crop ends shall be permissible.

10.0 CHEMICAL COMPOSITION:

The analysis of the material and the permissible variation in the composition from the specified limits shall be as follows:

Element	Percent		Permissible variation, %
	min.	max.	
Carbon	0.17	0.25	± 0.02
Silicon	-	0.40	+ 0.05
Manganese	0.40	0.80	± 0.04
Chromium	1.20	1.50	± 0.05
Molybdenum	0.55	0.80	± 0.05
Vanadium	0.20	0.35	± 0.03
Sulphur	-	0.020	+ 0.005
Phosphorus	-	0.020	+ 0.005
Copper	-	0.20	
Tin	-	0.025	
Arsenic	-	0.010	
Antimony	-	0.010	
Aluminium	-	0.02	

Note: Nickel content of about 0.80% max. is permissible.

11.0 TEST SAMPLES:**11.1 Chemical analysis:**

Each melt shall be analysed for chemical composition.

11.2 MECHANICAL TESTS:

A hardness test is to be carried out to verify the uniformity of the strength within the delivery lot (per melt and heat treatment batch). The test amount shall be 10% of the bars, but not less than 10 bars. In case of less than 10 bars, all bars shall be hardness tested. Mechanical properties shall be tested on hardest and softest bar.

The taking of specimens has to be carried out according to EN 10083-2 with the following exception:

Up to a diameter (d) or an edge length (a,b) > 100 mm, the transversal specimens can be taken with a distance of d/3 or a/3 and b/3 from outside (instead of longitudinal specimens).

12.0 MECHANICAL PROPERTIES:

12.1 Tensile:

When tested in accordance with IS:1608, the test pieces shall show the following properties (values for transverse specimens in brackets):

Property	Bar < 160mm	Bar 160-600mm
Tensile strength, N/mm ²	700-850	700-850
0.2% Proof stress, N/mm ² ,min	550	550
Elongation (l= 5d), % min.	16	16 (13)
Reduction in area, % min.	60	60 (35)
Impact energy (J) *	63	63 (20)
Hardness (HB 30)	210-250	215-260

• Charpy Impact (ISO - V) Value :

When tested in accordance with IS : 1757, the piece shall show a minimum average Charpy impact value over three test values as specified above. Only one test value out of the three can be below the specified value but in no case shall be less than two-thirds the minimum specified value. All the 3 test values shall, however, be reported.

The test is applicable for bars of sizes above 16 mm only.

13.0 NON-DESTRUCTIVE TEST:

13.1 Verification inspection of all bars.



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13.2 100% Ultrasonic inspection of all bars above 40mm size according to EN 10228-3 type 1a and 1b table 3). Acceptance criteria shall be quality class 4 according to EN 10228-3 (table 5). In general, the decision limit for loss of back wall echo is 4 dB and for the real reflector length max. 10mm.

14.0 RETESTS:

As per EN10021.

15.0 TEST CERTIFICATE:

Three copies of test certificates shall be supplied unless otherwise stated on the order. In addition the supplier shall ensure to enclose one copy of test certificate alongwith their dispatch documents to facilitate quick clearance of material.

The test certificate shall bear the following information:

BHEL references:

BHEL order No.

HY10665 , Rev.No. 03: Bolting Steel bars for HTS - H & T (Gr.:21CrMoV57)

Supplier Referances:

Supplier's Name

Heat or Cast No.

Process of manufacture

Identification No.

Particulars of heat treatment & Batch No.

Results of Tests:

Chemical analysis

Mechanical properties

Ultrasonic test

Results of dimensional inspection

Mill test certificate

The certificate must be signed by the Chief, Inspection Department / Chief Metallurgist of the supplier's plant.

16.0 PACKING AND MARKING:

Bars shall be suitably packed to prevent corrosion and damage during transportation.

Bars over 63 mm diameter shall be individually stamped / painted on one end face with cast number and HY10665. Bars of 63 mm diameter and less shall be bundled together and identified by means of a metal label stating the cast number and specification No. HY10665 attached to the bundle.

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Each package shall, in addition bear the following information:

AA HY10665 : Bolting Steel bars for HTS - H & T (Gr.:21CrMoV57)

BHEL Order No.

Supplier's name and trade mark, if any.

Cast / Batch No.

Identification No.

Size and quantity supplied.

17.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) DIN 10269

2) IS: 3739

3) IS:1608

4) IS:1757

5) EN 10228-3

6) EN10021

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ALLOY STEEL BARS FOR HIGH TEMPERATURE SERVICE – HEAT TREATED**(GR. 11 Cr Mo 910)****1.0 GENERAL:**

This specification governs the requirements of alloy steel bars of grade 11 Cr Mo 910 in heat treated condition.

2.0 APPLICATION :

For the Manufacture of high temperature fasteners, bushes etc. involving welding.

3.0 CONDITIONS OF DELIVERY :

The bars shall be supplied in hot rolled/forged and heat treated condition..

4.0 COMPLIANCE WITH STANDARDS:

This material complies in general with DIN EN10273-2000 Gr.11CrMo910 (Number 1.7383). Assistance is also drawn from EN10222-2 : 2000 specification in preparation of this standard.

5.0 DIMENSION AND TOLERANCES:

5.1 Dimensions: The sizes shall be as specified in the order. Unless otherwise Specified, the bars shall be supplied in random lengths of 3 to 6 metres with maximum of 10% shorts down to 1 metre. Forged bars shall be supplied in lengths of 1.5 to 3.0 metres.

5.2 Tolerances:

5.2.1 Hot rolled bars: The bars shall not vary from specified diameter or distance across flats by more than $\pm 2\frac{1}{2}$ %.

5.2.2 Forged bars: The tolerance on the forged bars shall be as follows:

Revisions: Revised in line with EN10273-2000.			Issued : STANDARDS ENGINEERING & IPR COORDINATION DEPARTMENT		
Rev. No. 04	Amd. No.	Reaffirmed:	Prepared:	Approved:	Dt. of 1st issue:
Dt. FEB. 2006	Dt.	Year: 2021	STANDARDS	AGM (ENGG.)	JUL., 1982

Diameter, mm

Tolerance, mm

Above 50 to 125	+ 6.0
>125 to 175	+ 8.0
>175 ---	+ 12.5

Note: (FOR HOT ROLLED & FORGED BARS)

Insignificant surface defects in the form of dent and ripple marks are permissible provided their depth does not exceed half the tolerances on each size.

6.0 MANUFACTURE:

Steel shall be made by basic electric process and subsequently vacuum degassed. If any other process is employed, it shall be to mutual agreement between the supplier and BHEL.

Note: Raw material like ingots/blooms/billets required for forgings should be procured from BHEL approved sources alongwith test certificate.

7.0 HEAT TREATMENT:

7.1 The suggested heat treatment process shall be as follows:

Austenitizing at 920-980° C followed by air cooling or liquid quenching.

Tempering at 650-760° C followed by air cooling.

7.2 The supplier has the option of following heat treatment as per EN10273 or EN10222.

7.3 The actual heat treatment cycle followed shall be reported in the test certificate.

8.0 FREEDOM FROM DEFECTS:

The bars shall be straight, sound and free from internal and surface defects viz., cracks, piping, scabs, laps, hairline cracks etc. The bars shall be free from twists and bends.

9.0 FINISH:

9.1 The surface of the bars shall be smooth without any laps, rolled in scales etc. Dents, roll marks and scratches are permitted provided their depth does not exceed half the tolerance limits as specified in Cl.5.0.

9.2 The edges of bars shall be cut square by sawing or shearing and no crop ends shall be permissible.

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10.0 SELECTION OF TEST SAMPLES:**10.1 Chemical Analysis:** Each melt shall be analysed for chemical composition.**10.2 Mechanical Tests:****10.2.1** One sample per lot, comprising of bars of same size, melt and heat treatment batch shall be taken for mechanical testing.**10.2.2** For bars of nominal size 150mm and below, longitudinal test specimen shall be taken. The test samples shall be taken as per EN10273.**11.0 CHEMICAL COMPOSITION:**

The melt analysis of the material shall be as follows:

Element		C	Si	Mn	Cr	Mo	P	S	Cu
Melt analysis	Min.	0.08	-	0.40	2.00	0.90	-	-	-
	Max.	0.15	0.50	0.80	2.50	1.10	0.030	0.025	0.30
Variation in product analysis		± 0.02	± 0.05	+ 0.10 - 0.05	± 0.10	± 0.04	+0.005	+0.005	-

NOTE: The Al content of the melt shall be determined and stated in the test certificate.**12.0 MECHANICAL PROPERTIES:**

The following mechanical properties shall be achieved when tested at room temperature.

12.1 For bars of sizes upto 100 mm diameter (As per EN10273-2000).

Size mm	Tensile strength N/mm ² , min.	Yield Strength N/mm ² , min.	% Elongation (l=5d), min.	Impact Strength, J, min. (2 mm-V notch)
Upto 60	520-670	310	18	40J
> 60 to 100	520-670	310	17	40J

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12.2 For bars above 100 mm (As per EN10222-part 2-2000).

Size mm	Tensile strength N/mm ² , min.	Yield Strength, min.	% Elongation (l=5d), min.		Impact Strength, J, min. (2 mm-V notch)	
			L	T	L	T
>100 to 200	520-670	310	20	20	60	50
>200 to 500	450-600	265	23	21	50	34

NOTE: 1) The tensile test shall be carried out in accordance with IS:1608 or any reputed National Standard.

2) Impact Test shall be conducted as per IS:1757 or any reputed National Standard. The impact value given above is the average of 3 ISO-V notch samples. All the three values shall be reported. Only one value of the three can be below the specified minimum, but in no case below 2/3rd of the specified minimum value.

13.0 RETESTS:

13.1 If any of the test specimen fails to meet the requirements specified in cl .12, the sample bar from which the test specimen was cut shall be rejected and two further sample bars from the same lot shall be taken for retest.

13.2 If the retests also fail, manufacturer is at liberty to reheat treat the bars in question. Not more than two reheat treatments are allowed. However retempering is not considered as reheat treatment.

13.3 If after reheat treatment, the mechanical properties are not complied with, the entire lot shall be rejected.

14.0 HIGH TEMPERATURE PROPERTIES:

The elevated temperature and creep properties as specified in EN10273 shall be guaranteed by the supplier.



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15.0 ULTRASONIC TEST :

All bars above 50 mm diameter shall be ultrasonically tested according to ASTM:A388 (BHEL Standard AA0850118), to ensure freedom from defects.

The following defects (Category 2 of AA0850118) shall be unacceptable.

- i) Cracks, flakes, seams and laps.
- ii) Defects giving indications larger than that from a 4mm diameter equivalent flaw.
- iii) Groups of defects with maximum indication less than that from a 4mm diameter equivalent flaw which can not be separated at testing sensitivity if the back echo is reduced to less than 50%
- iv) Defects giving indications of 2 to 4mm diameter equivalent flaw separated by a distance less than four times the size of the larger of the adjacent flaws.

16.0 INSPECTION AT SUPPLIER'S WORKS:

The representative of BHEL shall have free access to the supplier's works at all times during the execution of the order, to satisfy himself that the material is produced as per the quality requirements of this specification. All reasonable facilities shall be extended to him, free of charge. He may also witness the sampling, testing and marking called for in this specification.

17.0 TEST CERTIFICATES :

Five copies of the test certificate shall be furnished giving the following details.

- a) Specification No. HY 10666 / Rev.04
- b) BHEL Order No.
- c) Size
- d) Name of the Supplier
- e) Process of steel manufacture & bars
- f) Melt No.
- g) Heat Treatment details and batch No.
- h) Results of chemical analysis and mechanical tests.
- i) Results of Ultrasonic tests.
- j) Guarantee for high temperature properties.

18.0 PACKING AND MARKING :

- 18.1 Marking:** All bars with cross-sectional dimension greater than 50mm shall be stamped with the melt number, specification number and supplier's trade mark on one end face of the bars.

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Bars of sectional dimension 50mm and below shall be bundled as per each size and a metal label bearing the following information shall be securely attached to each bundle.

- a) BHEL Specification No. HY 10666 / Rev.04
- b) BHEL Order No.
- c) Melt No. & Heat Treatment batch No.
- d) Size & Weight
- e) Supplier's trade mark

18.2 Packing : The bars shall be suitably packed to prevent corrosion and damage during transit.

19.0 REJECTION AND REPLACEMENT :

In the event of the bar material proving defective in the course of further processing at BHEL, the same shall be rejected notwithstanding any previous acceptance.

The supplier shall replace the material forging at his own cost and the rejected bars shall be returned after all the commercial conditions are satisfied.

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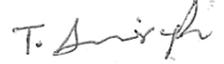
M. Laxmi Rajam
Sr. Manager / QA & BE
BHEL-HPEP, HYD-32

	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/EM/24-25/ASRND/009 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 1 OF 6			
		ITEM: AS BARS (GR: 40CR7AL (M02)) BHEL SPEC: AA10502 R09									

SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	*	Agency			Remarks
										D	P	W	
A APPLICABLE FOR MANUFACTURERS ONLY													
1.0 RAW MATERIAL INSPECTION													
1.1	Mother Ingots	Identification & correlation of material with TC's	Major	Verification	100%	BHEL SPEC	BHEL SPEC	RMTC	✓	2	-	1	Note-1
2.0 IN PROCESS INSPECTION													
2.1	Heat Treatment (Harden and Temper)	HT Parameters	Major	HT Chart	100%	BHEL SPEC	BHEL SPEC	HT Chart	✓	2	-	1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Note-8
3.0 FINAL INSPECTION													
3.1	Identification of Test Sample	Test piece location & size, stamping on test piece	Critical	Visual	BHEL SPEC	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC..

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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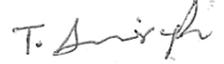
 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/EM/24-25/ASRND/009 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 2 OF 6					
		ITEM: AS BARS (GR: 40CR7AL10MO2) BHEL SPEC: AA10502 R09											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.2	Product Analysis	Chemical Composition	Major	Chemical analysis	As per cl 3.1 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2		1	Note-8
3.3	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation	Critical	Mech. Properties	As per cl 3.1 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Note-8
		Impact Test	Major	Mech. Properties	As per cl 3.1 of SQP	BHEL Spec	BHEL SPEC	NABL TC	✓	2	1	-	All 3 values should be reported in the TC Note-8
3.4	PMI	Material Identification	Major	PMI	10%	BHEL SPEC / PO	BHEL SPEC / PO	TC	✓	2	1		Note-8
3.5	NDT - For bars above 100 mm (above 40 mm if specified in the PO)	Soundness of the material	Critical	UT	100%	AA0850118 R01	AA0850118 R01 Cat 2	NDT Report	✓	2	1	1	Random 10% witness Note-8

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	Format no.: HYQA/QP/VSQP Rev.02		

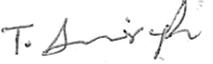
SI No		Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
											P	W	V	
3.6		Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects	Major	Physical verification & Measurement	100%	BHEL SPEC, IS 3739 / PO	BHEL SPEC, PO	Inspection Report	✓	2	1	-	Random 10% witness by TPIA The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Note-8
4.0		PRESERVATION, PACKING & MARKING												
4.1		Marking of the bars	Marking by hard punch method	Major	Visual	100%	BHEL SPEC / PO	BHEL SPEC / PO	Inspection Report	✓	2	1#	1	#Random Witness by TPIA Marking on the bars shall be correlated with the TCs.
4.2		Preservation and Packing	Visual	Major	Visual	100%	BHEL SPEC	BHEL SPEC	-	-	2	-	1	

<p>LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.</p>	<p>PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA</p>	<p>REVIEWED BY:  M. L. Rajam Sr. Manager / QA</p>	<p>APPROVED BY:  T. Muniraghavulu AGM / QA</p>
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		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/EM/24-25/ASRND/009 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 4 OF 6					
		ITEM: AS BARS (GR: 40CR7AL10MO2) BHEL SPEC: AA10502 R09											
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
4.3	Completeness of all documentations including IBR certification if applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC /PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA.
B APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY													
1.1	TCs Verification	Chemical, HT, Mechanical, NDT, RMTC	Major	Verification	100%	BHEL SPEC	BHEL SPEC	Mill TC	✓	2	-	1	Note-1
1.2	Identification of Test Sample	Test piece location & size, stamping on test piece	Critical	Visual	BHEL SPEC	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
1.3	Product Analysis	Chemical Composition	Major	Chemical analysis	As per cl 1.2 of SQP	BHEL SPEC	BHEL SPEC	TC	✓	2	1	-	Note-8
1.4	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation	Critical	Mech. Properties	As per cl 1.2 of SQP	BHEL SPEC	BHEL SPEC	TC	✓	2	1	-	Note-8
1.5		Impact Test	Major	Mech. Properties	As per cl 1.2 of SQP	BHEL Spec	BHEL SPEC	NABL TC	✓	2	1	-	Note-8
1.6	PMI	Material Identification	Major	PMI	100%	BHEL SPEC / PO	BHEL SPEC / PO	TC	✓	2	1	1	Random 10% witness Note-8

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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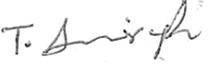
		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: AS BARS (GR: 40CR7AL10MO2) BHEL SPEC: AA10502 R09				QP. NO: HYQA/SQP/EM/24-25/ASRND/009 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 5 OF 6					
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
1.7	NDT - For bars above 100 mm (above 40 mm if specified in the PO)	Soundness of the material	Critical	UT	10%	AA0850118 R01	AA0850118 R01 Cat 2	NDT Report	✓	2	1		Note-8
1.8	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects, Marking	Major	Physical verification & Measurement	100%	BHEL SPEC, IS 3739 / PO	BHEL SPEC, PO	Inspection Report	✓	2	1	-	Random 10% witness by TPIA The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking by hard punch method Note-8
1.9	Preservation and Packing	Visual	Major	Visual	100%	BHEL SPEC	BHEL SPEC	-	-	2	-	1	
1.10	Completeness of all documentations	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC /PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: AS BARS (GR: 40CR7AL10MO2) BHEL SPEC: AA10502 R09				QP. NO: HYQA/SQP/EM/24-25/ASRND/009 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029					
								PAGE 6 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency P W V			Remarks

NOTES:

- BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORRELATION.
- THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
- DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
- BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
- INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
- ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
- REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
- ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
- VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.
- VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
- VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
- ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
- VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
- VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.
- QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.
- VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
- VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (✓) UNDER COLUMN 'D' OF APPROVED QUALITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
- ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.
- ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1, MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
- IN NTPC PROJECTS: - ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY :  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no.: HYQA/QP/VSQP Rev.02		


 Sr. Manager / QA & BE
 BHEL, HYD. 32

 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: AS ROUNDS (GR: 16 Mm Cr 5) BHEL SPEC: HY10565 R03					QP. NO: HYQA/SQP/CMM/24-25/ASRND5/010 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 1 OF 6							
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks	
A APPLICABLE FOR MANUFACTURERS ONLY														
1.0 RAW MATERIAL INSPECTION														
1.1	Mother Ingots	Identification & correlation of material with TC's	Major	Verification	100%	BHEL SPEC	BHEL SPEC	MTC	✓	2	-	1	Note-1	
2.0 IN PROCESS INSPECTION														
2.1	Heat Treatment (including test pieces for bars above 250mm)	HT Parameters	Major	HT Chart	100%	BHEL SPEC	BHEL SPEC	HT Chart	✓	2	-	1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Refer note 9	
3.0 FINAL INSPECTION														
3.1	Identification of Test Sample	Test piece location & size, stamping on test piece	Critical	Visual		BHEL SPEC	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
3.2	Product Analysis	Chemical Composition	Major	Chemical analysis	As per cl A 3.1 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer note 9	
3.3	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation	Critical	Mech. Properties	As per cl A 3.1 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer note 9	

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
Format no. : HYQA/QP/VSQP Rev.02			

		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/24-25/ASRND5/010 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 2 OF 6					
		ITEM: AS ROUNDS (GR: 16 Mn Cr 5) BHEL SPEC: HY10565 R03											
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.4	Hardness Test on bars	Hardness Test	Critical	Hardness Test	5% (min 2 bars)	BHEL SPEC	BHEL SPEC	TC	✓	2	1	-	Hardness also to be checked on test samples Refer note 9
3.5	PMI	Material Identification	Major	PMI	10%	BHEL SPEC / PO	BHEL SPEC / PO	TC	✓	2	1	-	Refer note 9
3.6	NDT (For bars above 50mm)	Soundness of the material	Critical	UT	100%	AA0850118 R01	AA0850118 R01 Cat 2	NABL TC	✓	2	1	-	10% random witness by BHEL TPI Refer note 9
3.7	Metallography Test	Grain Size, Inclusion content	Critical	Metallography Test	As per cl 3.1 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2		1	Refer note 9
3.8	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects	Major	Physical verification & Measurement	100%	BHEL SPEC / PO	BHEL SPEC / PO	Inspection Report	✓	2	1	-	10% random witness by BHEL TPI The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer note 9

LEGEND:
P: - PERFORM, **W:** - WITNESS, **V:** - VERIFICATION,
INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V.
* **D:** RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.

PREPARED BY:

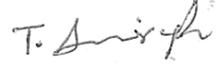
Ch. B V Sirisha
Sr. Engineer/QA

REVIEWED BY:

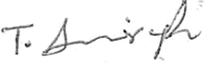
M. L. Rajam
Sr. Manager / QA

APPROVED BY:

T. Muniraghavulu
AGM / QA

		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/24-25/ASRND5/010 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 3 OF 6								
ITEM: AS ROUNDS (GR: 16 Mn Cr 5) BHEL SPEC: HY10565 R03		SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks	
												P	W	V		
4.0		PRESERVATION, PACKING & MARKING														
4.1	Marking of the bars	Marking by hard punch method	Major	Visual	100%	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	1	10% random witness by BHEL TPI Marking on the bars shall be correlated with the TCs.			
4.2	Preservation and Packing	Visual	Major	Visual	100%	BHEL SPEC /PO	BHEL SPEC / PO	-	-	2	-	1				
4.3	Completeness of all documentations including IBR as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured			
B		APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY														
1.1	TC Verification	Chemical, HT, Mechanical, Hardness, Metallography, UT, Raw Material TC	Major	Verification	100%	BHEL SPEC	BHEL SPEC	Mill TC	✓	2	-	1	Note-1			
1.2	Identification of Test Sample	Test piece location & size, stamping on test piece	Critical	Visual	BHEL SPEC	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.			
1.3	Product Analysis	Chemical Composition	Major	Chemical analysis	As per cl B 1.2 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer note 9			
LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.								PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA			REVIEWED BY:  M. L. Rajam Sr. Manager / QA			APPROVED BY:  T. Muniraghavulu AGM / QA		
Format no. : HYQA/QP/VSQP Rev.02																

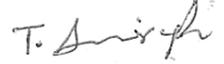
 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/24-25/ASRNDS/010 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 4 OF 6					
		ITEM: AS ROUNDS (GR: 16 Mn Cr 5) BHEL SPEC: HY10565 R03											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
1.4	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation	Critical	Mech. Properties	As per cl B 1.2 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer note 9
1.5	Hardness Test on bars	Hardness Test	Critical	Hardness Test	5% (min 2 bars)	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer note 9
1.6	PMI	Material Identification	Major	PMI	100%	BHEL SPEC / PO	BHEL SPEC / PO	TC	✓	2	1	-	10% random witness by BHEL TPI Refer note 9
1.7	NDT (For bars above 50mm)	Soundness of the material	Critical	UT	10%	AA0850118 R01	AA0850118 R01 Cat 2	NABL TC	✓	2	1	-	Refer note 9
1.8	Metallography Test	Grain Size, Inclusion content	Critical	Metallography Test	As per cl B 1.2 of SQP	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer note 9

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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ITEM: AS ROUNDS (GR: 16 Mn Cr 5) BHEL SPEC: HY10565 R03				SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
														P	W	V	
1.9	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects, marking on bars	Major	Physical verification & Measurement	100%	BHEL SPEC / PO	BHEL SPEC / PO	Inspection Report	✓	2	1	-					10% random witness by BHEL TPI The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer note 9
1.10	Preservation and Packing	Visual	Major	Visual	100%	BHEL SPEC / PO	BHEL SPEC / PO	-	-	2	-	1					
1.11	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC / PO	BHEL SPEC / PO	TC	-	2	-	1					All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

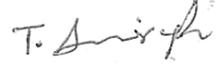
NOTES:

1. BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORRELATION.
2. THE BARS SHALL BE SUPPLIED IN HOT ROLLED / FORGED AND QUENCHED AND TEMPERED CONDITION.

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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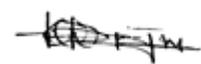
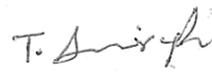
		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/24-25/ASRND5/010 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029					
				ITEM: AS ROUNDS (GR: 16 Mn Cr 5) BHEL SPEC: HY10565 R03				PAGE 6 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	*	Agency			Remarks
										D	P	W	

3. THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
4. DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
5. BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
6. INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
7. ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
8. REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
9. ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
10. VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.
11. VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
12. VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
13. ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
14. VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
15. VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.
16. QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.
17. VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
18. VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (✓) UNDER COLUMN 'D' OF APPROVED QUALITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
19. ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.
20. ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1 , MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
21. IN NTPC PROJECTS: - ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY.

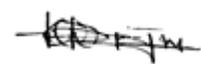
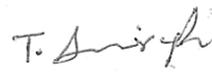
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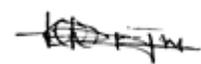
 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: AS ROUNDS BHEL SPEC: HY10561 R04, HY 10563 R03						QP. NO: HYQA/SQP/CMM/24-25/ASRNDS/011 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 1 OF 7								
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks			
													P	W	V	
A APPLICABLE FOR MANUFACTURERS ONLY																
1.0 RAW MATERIAL INSPECTION																
1.1	Raw Materials	Identification & correlation of material with TC's	Major	Verification	100%	BHEL SPEC	BHEL SPEC	RMTC	✓	2	-	1	Note-1			
2.0 IN PROCESS INSPECTION																
2.1	Melting Process	Chemical Analysis/ Ladle or Heat Analysis	Major	Chemical Analysis	Each Melt	BHEL SPEC	BHEL SPEC	TC	✓	2	-	1				
2.2	Heat Treatment	HT Parameters	Major	HT Chart	Each HT Batch	BHEL SPEC	BHEL SPEC	HT Chart	✓	2	-	1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Refer Note 9			
3.0 FINAL INSPECTION																
3.1	Identification of Test Sample	Test piece location & size	Critical	Visual	As per Spec	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.			
3.2	Product Analysis	Chemical Composition	Major	Chemical analysis	Each Melt	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer Note 9			

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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		ITEM: AS ROUNDS BHEL SPEC: HY10561 R04, HY 10563 R03											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.3	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On Sample identified	BHEL SPEC / IS 1608	BHEL SPEC	NABL TC	✓	2	1	-	Refer Note 9
		Impact Test	Major	Mech. Properties	On 3 Samples identified	BHEL SPEC / IS 1757	BHEL SPEC	NABL TC	✓	2	1	-	All 3 values should be reported in the TC Refer Note 9
3.4	Hardness Test on bars	Hardness Test	Critical	Hardness Test	5% (min 2 bars)	BHEL SPEC / IS 1500	BHEL SPEC	NABL TC	✓	2	1	-	Refer Note 9
3.5	PMI	Material Identification	Major	PMI	10%	BHEL SPEC	BHEL SPEC	TC	✓	2	1	-	Refer Note 9
3.6	NDT (For bars above 50mm)	Soundness of the material	Critical	UT	100%	AA0850118 R01	AA0850118 R01 Cat 2	NABL TC	✓	2	1	-	10% random witness by BHEL TPI Refer Note 9

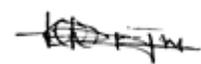
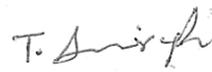
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ITEM: AS ROUNDS BHEL SPEC: HY10561 R04, HY 10563 R03															
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks		
										P	W	V			
3.7	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects	Major	Physical verification & Measurement	100%	BHEL SPEC / PO	BHEL SPEC / PO	Inspection Report	✓	2	1	-	10% random witness by BHEL TPI The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer Note 9		
4.0	PRESERVATION, PACKING & MARKING														
4.1	Marking of the bars	Marking by hard punch method	Major	Visual	100%	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	1	10% random witness by BHEL TPI Marking on the bars shall be correlated with the TCs.		
4.2	Preservation and Packing	Visual	Major	Visual	100%	BHEL SPEC	BHEL SPEC	-	-	2	-	1			

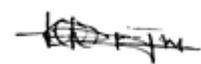
LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no. : HYQA/QP/VSQP Rev.02		

	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/24-25/ASRNDS/011					
		ITEM: AS ROUNDS BHEL SPEC: HY10561 R04, HY 10563 R03						Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029					
PAGE 4 OF 7													

Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
4.3	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC / PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured
B	APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY												
1.1	TC Verification	Chemical, HT, Mechanical, Hardness, UT, Raw material TCs	Major	Verification	100%	BHEL SPEC	BHEL SPEC	Mill TC	✓	2	-	1	Note-1
1.2	Identification of Test Sample	Test piece location & size	Critical	Visual	As per Spec	BHEL SPEC	BHEL SPEC	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
1.3	Product Analysis	Chemical Composition	Major	Chemical analysis	Each Melt	BHEL SPEC	BHEL SPEC	NABL TC	✓	2	1	-	Refer Note 9
1.4	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On Sample identified	BHEL SPEC / IS 1608	BHEL SPEC	NABL TC	✓	2	1	-	Refer Note 9
1.5		Impact Test	Major	Mech. Properties	On 3 Samples identified	BHEL SPEC / IS 1757	BHEL SPEC	NABL TC	✓	2	1	-	All 3 values should be reported in the TC Refer Note 9

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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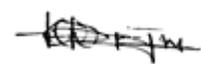
 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/24-25/ASRND5/011 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 5 OF 7					
		ITEM: AS ROUNDS BHEL SPEC: HY10561 R04, HY 10563 R03											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
1.6	Hardness Test on bars	Hardness Test	Critical	Hardness Test	5% (min 2 bars)	BHEL SPEC / IS 1500	BHEL SPEC	NABL TC	✓	2	1	-	Refer Note 9
1.7	PMI	Material Identification	Major	PMI	100%	BHEL SPEC	BHEL SPEC	TC	✓	2	1	-	10% Random Witness by BHEL TPIA Refer Note 9
1.8	NDT (For bars above 50mm)	Soundness of the material	Critical	UT	10%	AA0850118 R01	AA0850118 R01 Cat 2	NABL TC	✓	2	1	-	Refer Note 9
1.9	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects, marking	Major	Physical verification & Measurement	100%	BHEL SPEC / PO	BHEL SPEC / PO	Inspection Report	✓	2	1	-	10% Random Witness by BHEL TPIA The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking on the bars shall be correlated with the TCs. Refer Note 9

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
1.10	Preservation and Packing	Visual	Major	Visual	100%	BHEL SPEC	BHEL SPEC	-	-	2	-	1	
1.11	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC / PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

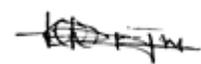
Notes:

1. BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORELATION.
2. THIS QAP IS NOT APPLICABLE WHERE IBR REQUIREMENTS ARE SPECIFIED. IN SUCH CASES, INSPECTION & CERTIFICATION SHALL BE AS PER IBR REQUIREMENTS.
3. THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
4. DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
5. BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
6. INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
7. ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
8. REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
9. ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
10. VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.
11. VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
12. VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
13. ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
14. VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
15. VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.
16. QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no. : HYQA/QP/VSQP Rev.02		

		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/24-25/ASRNDS/011 Rev. No.: 02 DATE: 05.01.2026 VALID UPTO: 04.01.2029					
				ITEM: AS ROUNDS BHEL SPEC: HY10561 R04, HY 10563 R03				PAGE 7 OF 7					
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency P W V			Remarks

17. VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
18. VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (v) UNDER COLUMN 'D' OF APPROVED QULAITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
19. ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.
20. ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1, MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
21. ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY FOR NTPC PROJECTS

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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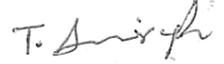

 Sr. Manager / QA & BE
 BHEL, HYDRABAD

	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS (GR: L43 / AISI 4340) BHEL SPEC: HY10566, Rev.02	QP. NO: HYQA/SQP/CMM/22-23/05 Rev. No.: 02 DATE: 05.01.2026 Valid Upto:04.01.2029 PAGE 1 OF 6
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Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	*	D	Agency			Remarks
											P	W	V	
A	APPLICABLE FOR MANUFACTURERS ONLY													
1.0	RAW MATERIAL INSPECTION													
1.1	Mother Ingots	Identification & correlation of material with RMTC's	Major	Verification	100%	BHEL Spec.	BHEL Spec.	RMTC	✓	2		1	Note 20	
2.0	IN PROCESS INSPECTION													
2.1	Heat Treatment	Time, Temperature	Major	HT Chart	Each HT Batch	BHEL Spec.	BHEL Spec.	HT Chart	✓	2		1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Refer Note 7	
2.2	Stress relieving (if the bars are straightened post Heat treatment)	HT Parameters	Major	HT Chart	100%	BHEL Spec.	BHEL Spec.	HT Chart	✓	2	-	1		
3.0	FINAL INSPECTION													
3.1	Hardness Test on bars	Hardness Test	Critical	Hardness Test	10% (minimum 10 bars)	BHEL Spec.	BHEL Spec.	TC	✓	2		1	Hardest and Softest bars shall be taken for mechanical test Refer Note 7	
3.2	Identification of Test Sample	Test piece location & size	Critical	Visual	As per Spec	BHEL Spec.	BHEL Spec.	IR	✓	2		1	Sample identification and its traceability to the lot shall be mentioned in TC.	
3.3	Product Analysis	Chemical Composition	Major	Chemical analysis	On Selected Samples	BHEL Spec.	BHEL Spec.	NABL TC	✓	2		1	Refer Note 7	

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
Format no. : HYQA/QP/VSQP Rev.02			

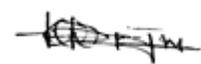
 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/22-23/05 Rev. No.: 02 DATE: 05.01.2026 Valid Upto:04.01.2029 PAGE 2 OF 6					
		ITEM: ALLOY STEEL BARS (GR: L43 / AISI 4340) BHEL SPEC: HY10566, Rev.02											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.4	Mechanical Properties	Tensile, Proof, % Elongation, % reduction	Critical	Mech. Properties	On Selected Samples	BHEL Spec.	BHEL Spec.	NABL TC	✓	2		1	Refer Note 7
3.5		Impact test	Critical	Mech. Properties	On Selected Samples	BHEL Spec.	BHEL Spec.	NABL TC	✓	2	1		All 3 values shall be reported in the TC Refer Note 7
3.6	PMI	Material Identification	Major	Test	100%	BHEL Spec.	BHEL Spec.	TC	✓	2	1		10% witness by BHEL & TPIA. Refer Note 7
3.7	NDT (UT) (>=40mm size)	Soundness of the material	Critical	UT	100%	EN 10228 - 3.	BHEL Spec.	NABL NDT Report	✓	2	1		10% witness by BHEL & TPIA. Refer Note 7
3.8	Metallography Test	Non-Metallic Inclusions	Critical	Metallogra phy Test	Each Lot	BHEL Spec.	BHEL Spec.	NABL TC	✓	2		1	Refer Note 7
3.9	Visual examination & dimensional inspection	Visual & Dimension	Major	Physical verification & Measurement	100%	BHEL Spec. & PO	BHEL Spec. & PO	IR	✓	2	1		10% random witness by BHEL & TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer Note 7
4.0	PRESERVATION, PACKING & MARKING												

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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		ITEM: ALLOY STEEL BARS (GR: L43 / AISI 4340) BHEL SPEC: HY10566, Rev.02											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
4.1	Marking of the bars	Visual	Major	Visual	100%	BHEL Spec.	BHEL Spec.	IR	✓	2	1#	1	#Random witness by TPIA Marking on the bars shall be correlated with the TCs.
4.2	Preservation and Packing	Visual	Major	Visual	-	BHEL Spec.	BHEL Spec.	-	-	2		1	
4.3	Completeness of all documentations	Verification	Major	Verification	BHEL Spec. & PO	BHEL Spec. & PO	BHEL Spec. & PO	TC	-	2		1	TCs endorsed by BHEL & TPIA.
B	APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY												
1.1	TC Verification	Chemical, HT, Mechanical, hardness, UT, metallography, RMTC	Major	Verification	100%	BHEL Spec.	BHEL Spec.	Mill TCs	✓	2		1	Refer Note 20
1.2	Hardness Test on bars	Hardness Test	Critical	Hardness Test	10% (minimum 10 bars)	BHEL Spec.	BHEL Spec.	TC	✓	2		1	Hardest and Softest bars shall be taken for mechanical tests Refer Note 7
1.3	Identification of Test Sample	Test piece location & size	Critical	Visual	As per Spec	BHEL Spec.	BHEL Spec.	IR	✓	2		1	Sample identification and its traceability to the lot shall be mentioned in TC.
1.4	Product Analysis	Chemical Composition	Major	Chemical analysis	As per Sample Selected	BHEL Spec.	BHEL Spec.	NABL TC	✓	2		1	Refer Note 7

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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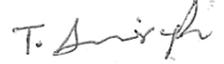
 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/22-23/05 Rev. No.: 02 DATE: 05.01.2026 Valid Upto:04.01.2029 PAGE 4 OF 6					
		ITEM: ALLOY STEEL BARS (GR: L43 / AISI 4340) BHEL SPEC: HY10566, Rev.02											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
1.5	Mechanical Properties	Tensile, 0.2 % Proof Stress, % Elongation, % Reduction	Critical	Mech. Properties	On Sample Selected	BHEL Spec.	BHEL Spec.	NABL TC	✓	2	1		Refer Note 7
1.6		Impact test	Critical	Mech. Properties	On Samples Selected	BHEL Spec.	BHEL Spec.	NABL TC	✓	2	1		All 3 values shall be reported in the TC Refer Note 7
1.7	PMI	Material Identification	Major	Test	100%	BHEL Spec.	BHEL Spec.	TC	✓	2	1		Random 10% witness by BHEL TPIA Refer Note 7
1.8	NDT (UT) (>=40mm size)	Soundness of the material	Critical	UT	10%	EN 10228 - 3.	BHEL Spec.	NDT NABL Report	✓	2	1		Refer Note 7
1.9	Metallography Test	Non-Metallic Inclusions	Critical	Metallography Test	On Sample Selected	BHEL Spec.	BHEL Spec.	NABL TC	✓	2		1	Refer Note 7
1.10	Visual examination & dimensional inspection	Visual & Dimension, marking on bars	Major	Physical verification & Measurement	100%	BHEL Spec. & PO	BHEL Spec. & PO	IR	✓	2	1		10% random witness by BHEL & TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking on the bars shall be correlated with the TCs. Refer Note 7
1.11	Preservation and Packing	Visual	Major	Visual	-	BHEL Spec.	BHEL Spec.	-	-	2		1	

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS (GR: L43 / AISI 4340) BHEL SPEC: HY10566, Rev.02				QP. NO: HYQA/SQP/CMM/22-23/05 Rev. No.: 02 DATE: 05.01.2026 Valid Upto:04.01.2029					
								PAGE 5 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
1.12	Completeness of all documentations	Verification	Major	Verification	BHEL Spec. & PO	BHEL Spec. & PO	BHEL Spec. & PO	TC	-	2		1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

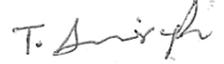
Notes:

- THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
- DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
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- ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
- VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.
- VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
- VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
- ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
- VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
- VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.
- QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.
- VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
- VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (v) UNDER COLUMN 'D' OF APPROVED QULAIITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
- ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.

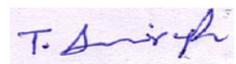
LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no. : HYQA/QP/VSQP Rev.02		

		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/22-23/05 Rev. No.: 02 DATE: 05.01.2026 Valid Upto:04.01.2029					
				ITEM: ALLOY STEEL BARS (GR: L43 / AISI 4340) BHEL SPEC: HY10566, Rev.02				PAGE 6 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	*	Agency			Remarks
									D	P	W	V	

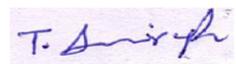
18. ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1, MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
19. IN NTPC PROJECTS: - ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY.
20. BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORELATION.

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMMNATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no. : HYQA/QP/VSQP Rev.02		

		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS (Gr. 42 Cr Mo 4) BHEL SPEC: HY10664, Rev.06				QP. NO: HYQA/SQP/CMM/ROUND/23-24/03 Rev. No.: 03 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 1 OF 5					
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	*	Agency			Remarks
										D	P	W	
A APPLICABLE FOR MANUFACTURERS ONLY													
1.0 RAW MATERIAL INSPECTION													
1.1	Mother Ingots	Identification & correlation of material with TC's	Major	Verification	100%	BHEL Spec,	BHEL Spec,	RMTC	✓	2	-	1	Refer Note 20
2.0 IN PROCESS INSPECTION													
2.1	Heat Treatment	HT parameters	Major	HT Chart	100%	BHEL Spec,	BHEL Spec,	HT Chart	✓	2	-	1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Refer note 7
2.2	Stress relieving (if the bars are straightened post Heat treatment)	HT Parameters	Major	HT Chart	100%	BHEL Spec.	BHEL Spec.	HT Chart	✓	2	-	1	
3.0 FINAL INSPECTION													
3.1	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
3.2	Product Analysis	Chemical Composition	Major	Chemical analysis	Each Melt	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 7
3.3	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On Samples identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 7
		Impact Test	Major	Mech. Properties	On Samples identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values shall be reported in TC Refer note 7

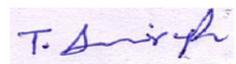
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	Format no. : HYQA/QP/VSQP Rev.02		

 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/ROUND/23-24/03 Rev. No.: 03 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 2 OF 5					
		ITEM: ALLOY STEEL BARS (GR: 42 Cr Mo 4) BHEL SPEC: HY10664, Rev.06											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.4	Hardness Test on bars	Hardness Test	Critical	Hardness Test	5% (min 2 bars)	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-	Refer note 7
3.5	PMI	Material Identification	Major	PMI	Random 10%	BHEL Spec,	BHEL Spec,	TC	✓	2	1		Refer note 7
3.6	NDT -UT (dia >50mm)	Soundness of the material	Critical	UT	100%	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	1	10 % Random Witness per lot by TPIA Refer note 7
3.8	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects	Major	Physical verification & Measurement	100%	BHEL Spec, PO	BHEL Spec, PO	Inspection Report	✓	2	1	1	10 % Random Witness per lot by TPIA The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer note 7
	Short Term Creep Rupture Test – as applicable	Creep Test	Critical	Verification	As per STD	ASTM E 139	DIN EN 10213 part II / EN 10269.	NABL TC	✓	2	-	1	
4.0	PRESERVATION, PACKING & MARKING												
4.1	Marking of the bars (hard stamping)	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1#	1	Marking on the bars shall be correlated with the TCs. # Random Witness by TPIA

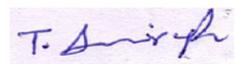
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	Format no. : HYQA/QP/VSQP Rev.02		

	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/ROUND/23-24/03				
		ITEM: ALLOY STEEL BARS (GR: 42 Cr Mo 4) BHEL SPEC: HY10664, Rev.06						Rev. No.: 03 DATE: 05.01.2026 VALID UPTO: 04.01.2029				
PAGE 3 OF 5												

Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
4.2	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	
4.3	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured
B	APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY												
1.1	TC Verification	Chemical, HT, Mechanical, Hardness, UT, RMTCT	Major	Verification	100%	BHEL Spec,	BHEL Spec,	Mill TC	✓	2	-	1	Refer Note 20
1.2	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
1.3	Product Analysis	Chemical Composition	Major	Chemical analysis	Each Melt	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 7
1.4	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	As per cl 3.1	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 7
1.5		Impact Test	Major	Mech. Properties	As per cl 3.1	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values shall be reported in TC Refer note 7
1.6	Hardness Test on bars	Hardness Test	Critical	Hardness Test	5% (min 2 bars)	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-	Refer note 7

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M. LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
	Format no. : HYQA/QP/VSQP Rev.02		

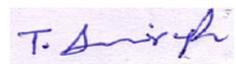
		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/ROUND/23-24/03 Rev. No.: 03 DATE: 05.01.2026 VALID UPTO: 04.01.2029 PAGE 4 OF 5					
				ITEM: ALLOY STEEL BARS (GR: 42 Cr Mo 4) BHEL SPEC: HY10664, Rev.06									
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
1.7	PMI	Material Identification	Major	PMI	100%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	1	10 % Random Witness per lot by TPIA Refer note 7
1.8	NDT -UT (dia >50mm)	Soundness of the material	Critical	UT	10%	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 7
1.9	Visual Examination & Dimensional Inspection	Visual & Dimension, Surface Finish, Freedom from defects	Major	Physical verification & Measurement	100%	BHEL Spec, PO	BHEL Spec, PO	Inspection Report	✓	2	1	-	10 % Random Witness per lot by TPIA The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking on the bars shall be correlated with the TCs. Refer note 7
1.10	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	
1.11	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M. LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
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		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS (GR: 42 Cr Mo 4) BHEL SPEC: HY10664, Rev.06				QP. NO: HYQA/SQP/CMM/ROUND/23-24/03 Rev. No.: 03 DATE: 05.01.2026 VALID UPTO: 04.01.2029					
								PAGE 5 OF 5					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	*	Agency			Remarks
										D	P	W	

NOTES:

- THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
- DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
- BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
- INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
- ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
- REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
- ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
- VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.
- VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
- VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
- ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
- VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
- VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.
- QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.
- VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
- VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (v) UNDER COLUMN 'D' OF APPROVED QULAIITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
- ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.
- ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1, MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
- IN NTPC PROJECTS: - ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY.
- BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORELATION. RAW MATERIAL LIKE INGOTS/BLOOMS/BILLETS REQUIRED FOR FORGINGS SHOULD BE PROCURED FROM BHEL APPROVED SOURCES ALONG-WITH TEST CERTIFICATE.

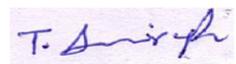
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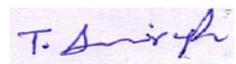
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		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE BHEL SPEC: HY10666, Rev.04				QP. NO: HYQA/SQP/CMM/37 Rev. No.: 03 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 1 OF 6					
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
A	APPLICABLE FOR MANUFACTURERS ONLY												
1.0	RAW MATERIAL INSPECTION												
1.1	Raw Material (Billet, Bloom, Ingot, etc)	Identification & correlation of material with TC's	Major	Verification	100%	BHEL Spec,	BHEL Spec,	MTC	✓	2	-	1	Refer Note-3
2.0	IN PROCESS INSPECTION												
2.1	Heat Treatment	HT parameters	Major	HT Chart	100% bars (Each HT Batch verify)	BHEL Spec,	BHEL Spec,	HT Chart	✓	2	-	1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Refer note 8. Vacuum Degassing or other method of mfg. shall be reported in TC.
3.0	FINAL INSPECTION												
3.1	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
3.2	Product Analysis	Chemical Composition	Major	Chemical analysis	Each Melt	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
3.3	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation	Critical	Mech. Properties	As per cl 3.1	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
		Impact Test	Major	Mech. Properties	As per cl 3.1	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values shall be reported in the TC Refer note 8
3.4	PMI	Material Identification	Major	PMI	10%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-	

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M.LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
	Format no.: HYQA/QP/VSQP Rev.02		

SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.5	NDT -UT (above 50 mm dia)	Soundness of the material	Critical	UT	100%	ASTM A 388 / AA0850118	BHEL Spec,	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
3.6	Visual Examination & Dimensional Inspection	Workmanship, Visual & Dimension Check, Surface Finish, Freedom from defects	Major	Visual and Measure	100%	BHEL Spec, PO	BHEL Spec, PO	Inspection Report	✓	2	1	-	10% random witness per lot by TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer note 8
3.7	Guarantee Certificate for Elevated Temperature & Creep properties	High Temperature & Creep Properties	Critical	Verification	As per BHEL Spec	BHEL Spec. / EN 10273	BHEL Spec.	Guarantee Certificate	✓	2	-	1	Guarantee Certificate duly verified by TPIA.
3.8	Short Term Creep Rupture Test – as applicable	Creep Test	Critical	Verification	As per STD	ASTM E 139	DIN EN 10213 part II / EN 10269.	NABL TC	✓	2	-	1	
3.9	Additional NDT -UT on final rounds before despatch	Soundness of the material	Critical	UT	100%	ASTM A 388 / AA0850118/ Annexure-I of This QAP	ASTM A 388 / AA0850118/ Annexure-I of This QAP	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
4.0	PRESERVATION, PACKING & MARKING												
4.1	Marking of the bars (Hard punch)	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	-	1	Marking on the bars shall be correlated with the TCs.
4.2	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	To prevent corrosion & damage during transportation
4.3	Completeness of all documentations including IBR as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

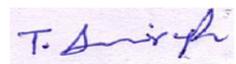
LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M. LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
Format no.: HYQA/QP/VSQP Rev.02			

 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/37 Rev. No.: 03 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 3 OF 6					
		ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE BHEL SPEC: HY10666, Rev.04											
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
B APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY													
1.1	TC Verification	Chemical, HT, Mech, UT, raw material TCs, Short Term Creep Rupture Test, Guarantee Certificate for Elevated Temperature & Creep properties	Major	Verification	100%	BHEL Spec,	BHEL Spec,	Mill TC & Guarantee Certificate	✓	2	-	1	Refer Note-3 Short Term Creep Rupture Test shall be NABL TC
1.2	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
1.3	Product Analysis	Chemical Composition	Major	Chemical analysis	On identified Samples	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
1.4	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On identified Samples	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
1.5		Impact Test	Major	Mech. Properties	On identified Samples	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values shall be reported in the TC Refer note 8
1.6	PMI	Material Identification	Major	PMI	100%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	1	10% random witness per lot by TPIA. Refer note 8
1.7	NDT -UT (above 50 mm dia)	Soundness of the material	Critical	UT	10%	ASTM A 388 / AA0850118	AA0850118 cat 2	NDT Report	✓	2	1	-	Refer note 8, 18, 19
1.8	Visual Examination & Dimensional Inspection	Workmanship, Visual & Dimension Check, Surface Finish, Freedom from defects, Marking of the bars	Major	Visual and Measure	100%	BHEL Spec, PO	BHEL Spec, PO	Inspection Report	✓	2	1	1	10% random witness per lot by TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking on the bars shall be correlated with the TCs. Refer note 8
LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.						PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA		REVIEWED BY  M.LAXMI RAJAM SR MANAGER / QA		APPROVED BY  T. MUNIRAGHAVULU AGM / QA			
Format no.: HYQA/QP/VSQP Rev.02													

 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/37 Rev. No.: 03 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 4 OF 6					
		ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE BHEL SPEC: HY10666, Rev.04						Format of Record	* D	Agency			Remarks
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms			P	W	V	
1.9	Additional NDT -UT on final rounds before despatch	Soundness of the material	Critical	UT	100%	ASTM A 388 / AA0850118/ Annexure-I of This QAP	ASTM A 388 / AA0850118/ Annexure-I of This QAP	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
1.10	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	To prevent corrosion & damage during transportation
1.11	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured

NOTES:

- THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
- DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
- BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORRELATION. RAW MATERIAL LIKE INGOTS/BLOOMS/BILLETS REQUIRED FOR FORGINGS SHOULD BE PROCURED FROM BHEL APPROVED SOURCES ALONG-WITH TEST CERTIFICATE.
- BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
- INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
- ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
- REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
- ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
- VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.
- VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
- VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
- ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
- VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
- VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M. LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
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		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/37 Rev. No.: 03 DATE: 29.01.2026 VALID UPTO: 28.01.2029					
				ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE BHEL SPEC: HY10666, Rev.04				PAGE 5 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	

15. QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.
16. VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
17. VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (v) UNDER COLUMN 'D' OF APPROVED QULAITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
18. ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.
19. ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1, MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
20. IN NTPC PROJECTS: - ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY.

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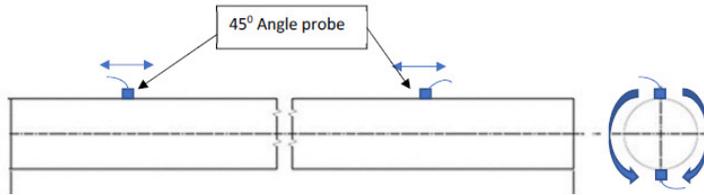
		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE BHEL SPEC: HY10666, Rev.04				QP. NO: HYQA/SQP/CMM/37 Rev. No.: 03 DATE: 29.01.2026 VALID UPTO: 28.01.2029					
								PAGE 6 OF 6					
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	

Annexure-I

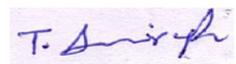
UT ADDITIONAL REQUIREMENTS

The following requirements shall be followed while carrying out UT in addition to requirements of the standard mentioned in Approved Quality plan/Product Specification for performing UT of Forgings:

- UT shall be performed by using 45° angle beam probe in 4 directions as shown in below sketch. Sensitivity shall be established by picking up corner echo. Calibration shall be established by picking up 1.5mm SDH hole of IIV V1 block which is at a depth of 35mm. This indication amplitude shall be set to 80% and this shall be the amplitude reference line. Any indication crossing this amplitude shall be rejected.

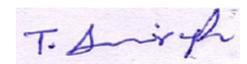


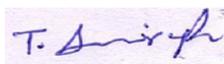
- The surface roughness of exterior finishes shall not exceed 250 µin. or 6 µm (as per clause 8.2 of ASTM A388). To obtain this surface finish, forging shall be rough machined.
- Dye Penetrant Testing shall be performed for detection of any surface defects. Acceptance standards shall be as follows:
 All surfaces to be examined shall be free of:
 (a) relevant linear indications;
 (b) relevant rounded indications greater than 5 mm.
 (c) four or more relevant rounded indications in a line separated by 1/16 in. (1.5 mm) or less (edge to edge).
 Note:
 (a) A linear indication is one having a length greater than three times the width.
 (b) An indication is considered as relevant when major dimensions greater than 1.5mm.

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	Format no.: HYQA/QP/VSQP Rev.02		

(Handwritten signature and stamp)
 M. LAXMI RAJAM
 SR. MANAGER / QA

Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP SERVICE (GR: 25 Cr Mo 4) (HARDENED & TEMPERED) BHEL SPEC: HY10663, Rev.05													
QP. NO: HYQA/SQP/CMM/RND/23-24/09 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 1 OF 6													
A APPLICABLE FOR MANUFACTURERS ONLY													
1.0 RAW MATERIAL INSPECTION													
1.1	Raw Material (Billet, Bloom, Ingot, etc)	Identification & correlation of material with TC's	Major	Verification	100%	BHEL Spec,	BHEL Spec,	MTC	✓	2	-	1	Refer Note-3
2.0 IN PROCESS INSPECTION													
2.1	Heat Treatment	HT parameters	Major	HT Chart	100% bars (Each HT Batch verify)	BHEL Spec,	BHEL Spec,	HT Chart	✓	2	-	1	The actual HT cycle followed shall be reported in TC. Furnace Calibration certificate and RTD Calibration certificate to be verified by TPIA Refer note 8. Vacuum Degassing or other method of mfg. shall be reported in TC.
2.2	Stress relieving (if the bars are straightened post Heat treatment)	HT Parameters	Major	HT Chart	100%	BHEL Spec.	BHEL Spec.	HT Chart	✓	2	-	1	
3.0 FINAL INSPECTION													
3.1	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
3.2	Product Analysis	Chemical Composition	Major	Chemical analysis	Each Melt	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
3.3	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & Reduction	Critical	Mech. Properties	As per cl 3.1	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION. INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M. LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
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 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE (GR: 25 Cr Mo 4) (HARDENED & TEMPERED) BHEL SPEC: HY10663, Rev.05						QP. NO: HYQA/SQP/CMM/RND/23-24/09 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 2 OF 6					
		SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency	
										P	W	V	
		Impact Test	Major	Mech. Properties	As per cl 3.1	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values shall be reported in the TC Refer note 8
3.4	PMI	Material Identification	Major	PMI	10%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-	
3.5	NDT -UT (above 50 mm dia)	Soundness of the material	Critical	UT	100%	ASTM A 388 / AA0850118	BHEL Spec,	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
3.6	Visual Examination & Dimensional Inspection	Workmanship, Visual & Dimension Check, Surface Finish, Freedom from defects	Major	Visual and Measure	100%	BHEL Spec, PO	BHEL Spec, PO	Inspection Report	✓	2	1	-	10% random witness per lot by TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer note 8
3.7	Short Term Creep Rupture Test – as applicable	Creep Test	Critical	Verification	As per STD	ASTM E 139	DIN EN 10213 part II / EN 10269.	NABL TC	✓	2	-	1	
3.8	Additional NDT -UT on final rounds before despatch	Soundness of the material	Critical	UT	100%	ASTM A 388 / AA0850118/ Annexure-I of This QAP	ASTM A 388 / AA0850118/ Annexure-I of This QAP	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
4.0	PRESERVATION, PACKING & MARKING												
4.1	Marking of the bars (Hard punch)	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	-	1	Marking on the bars shall be correlated with the TCs.
4.2	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	To prevent corrosion & damage during transportation
LEGEND: P: - PERFORM, W: - WITNESS , V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.						PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA		REVIEWED BY  M. LAXMI RAJAM SR MANAGER / QA		APPROVED BY  T. MUNIRAGHAVULU AGM / QA			
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	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE (GR: 25 Cr Mo 4) (HARDENED & TEMPERED) BHEL SPEC: HY10663, Rev.05						QP. NO: HYQA/SQP/CMM/RND/23-24/09 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 3 OF 6					

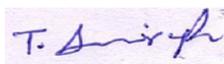
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
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4.3	Completeness of all documentations including IBR as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured
B APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY													
1.1	Mill TC Verification	Chemical, HT, Mech, UT, raw material TC, Short Term Creep Rupture Test	Major	Verification	100%	BHEL Spec,	BHEL Spec,	Mill TC	✓	2	-	1	Refer Note-3 Short Term Creep Rupture Test shall be NABL TC
1.2	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.
1.3	Product Analysis	Chemical Composition	Major	Chemical analysis	On identified Samples	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
1.4	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On identified Samples	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer note 8
1.5		Impact Test	Major	Mech. Properties	On identified Samples	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values shall be reported in the TC Refer note 8
1.6	PMI	Material Identification	Major	PMI	100%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	1	10% random witness per lot by TPIA. Refer note 8
1.7	NDT -UT (above 50 mm dia)	Soundness of the material	Critical	UT	10%	ASTM A 388 / AA0850118	AA0850118 cat 2	NDT Report	✓	2	1	-	Refer note 8, 18, 19

LEGEND: P:- PERFORM, W:- WITNESS, V:- VERIFICATION, INDICATING 1:- BHEL / BHEL NOMINATED INSPECTION AGENCY, 2:- VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M.LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
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 BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD											STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE (GR: 25 Cr Mo 4) (HARDENED & TEMPERED) BHEL SPEC: HY10663, Rev.05			QP. NO: HYQA/SQP/CMM/RND/23-24/09 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 4 OF 6		
1.8	Visual Examination & Dimensional Inspection	Workmanship, Visual & Dimension Check, Surface Finish, Freedom from defects, Marking of the bars	Major	Visual and Measure	100%	BHEL Spec, PO	BHEL Spec, PO	Inspection Report	✓	2	1	1	10% random witness per lot by TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking on the bars shall be correlated with the TCs. Refer note 8			
1.9	Additional NDT -UT on final rounds before despatch	Soundness of the material	Critical	UT	100%	ASTM A 388 / AA0850118/ Annexure-I of This QAP	ASTM A 388 / AA0850118/ Annexure-I of This QAP	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19			
1.10	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	To prevent corrosion & damage during transportation			
1.11	Completeness of all documentations including IBR TC Verification as applicable	Verification	Major	Verification	100%	BHEL SPEC /PO	BHEL SPEC / PO	TC	-	2	-	1	All TC's, IR shall be endorsed by TPIA. For IBR Traceability & Authorisation Certificate by Competent Persons to be ensured			

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- BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
- INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
- ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
- REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
- ONLY VALID AND CALIBRATED MEASURING INSTRUMENTS AND EQUIPMENT SHALL BE USED – TPIA TO VERIFY. COPY OF CALIBRATION RECORD SHALL BE PART OF DOCUMENTATION
- VENDOR TO ENSURE WITH TPIA THAT MATERIAL TEST CERTIFICATE & TRACEABILITY RECORDS ARE AVAILABLE FOR USE OF CORRECT MATERIAL.

LEGEND: P: - PERFORM, W: - WITNESS , V: - VERIFICATION. INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M.LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
	Format no.: HYQA/QP/VSQP Rev.02		

	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS						QP. NO: HYQA/SQP/CMM/RND/23-24/09 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029					
		ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE (GR: 25 Cr Mo 4) (HARDENED & TEMPERED) BHEL SPEC: HY10663, Rev.05						PAGE 5 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	

10. VENDOR TO OFFER ORIGINAL TEST CERTIFICATES ISSUED BY THIRD PARTY LABORATORIES OR SUPPLIERS.
11. VENDOR SHALL SUBMIT ORIGINAL COPIES OF ALL INSPECTION AND TEST DOCUMENTS AUTHENTICATED BY TPIA.
12. ALL TEST CERTIFICATES/ REPORTS REVIEWED AND CERTIFIED BY TPI SHALL BE SUBMITTED TO BHEL AS DOCUMENTATION PACKAGE.
13. VENDOR TO ENSURE WITH TPIA THAT A NOTE 'COMPARED WITH ORIGINAL TEST CERTIFICATE. REVIEWED, VERIFIED AND FOUND IN ORDER' SHALL CONTAIN WITH EVERY INSPECTION REPORT.
14. VENDOR TO ENSURE THAT ALL CERTIFICATES ARE ENDORSED BY TPIA WITH COMMENTS (WITNESSED OR VERIFIED) AS PER QUALITY PLAN.
15. QUALIFICATION OF EQUIPMENT, PROCESS & PERSONNEL FOR SPECIAL PROCESSES LIKE WELDING, BRAZING, PAINTING & METAL COATING ETC. (AS APPLICABLE AS PER PO) SHALL BE ENSURED.
16. VENDOR SHALL OFFER LOG SHEETS CONTAINING ACTUAL MEASURED VALUES INSTEAD OF SAYING OK/NOT OK TO TPIA.
17. VENDOR SHALL SUBMIT COMPLETE INSPECTION AND TEST DOCUMENTATION WHICHEVER IS IDENTIFIED WITH (v) UNDER COLUMN 'D' OF APPROVED QULAIITY PLAN SHALL BE ENCLOSED WITH THE INSPECTION REPORT.
18. ONLY LEVEL II & ABOVE QUALIFIED PERSON IN RESPECTIVE NDE TO VERIFY OR WITNESS THE NDT TEST REPORT/RESULTS.
19. ALL VENDOR PERSONNEL PERFORMING NDE SHALL BE QUALIFIED IN ACCORDANCE TO ASME SEC V ARTICLE 1, MANDATORY APPENDIX 3 ALONG WITH SNT-TC-1A.
20. IN NTPC PROJECTS: - ALL THE RAW MATERIAL SHALL BE PROCURED FROM MILL ONLY.

LEGEND: P: - PERFORM, W: - WITNESS , V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M.LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
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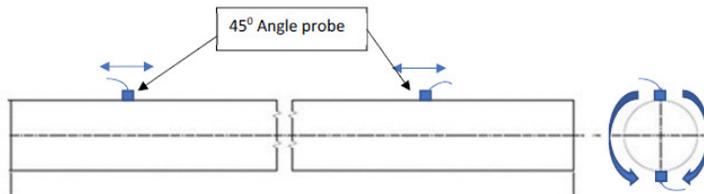
	BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD	STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: ALLOY STEEL BARS FOR HIGH TEMP. SERVICE (GR: 25 Cr Mo 4) (HARDENED & TEMPERED) BHEL SPEC: HY10663, Rev.05						QP. NO: HYQA/SQP/CMM/RND/23-24/09 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029					
								PAGE 6 OF 6					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	

Annexure-I

UT ADDITIONAL REQUIREMENTS

The following requirements shall be followed while carrying out UT in addition to requirements of the standard mentioned in Approved Quality plan/Product Specification for performing UT of Forgings:

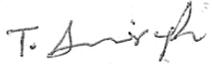
- UT shall be performed by using 45° angle beam probe in 4 directions as shown in below sketch. Sensitivity shall be established by picking up corner echo. Calibration shall be established by picking up 1.5mm SDH hole of IIW V1 block which is at a depth of 35mm. This indication amplitude shall be set to 80% and this shall be the amplitude reference line. Any indication crossing this amplitude shall be rejected.



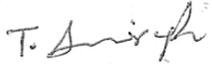
- The surface roughness of exterior finishes shall not exceed 250 µin. or 6 µm (as per clause 8.2 of ASTM A388). To obtain this surface finish, forging shall be rough machined.
- Dye Penetrant Testing shall be performed for detection of any surface defects. Acceptance standards shall be as follows:
All surfaces to be examined shall be free of:
(a) relevant linear indications;
(b) relevant rounded indications greater than 5 mm.
(c) four or more relevant rounded indications in a line separated by 1/16 in. (1.5 mm) or less (edge to edge).
Note:
(a) A linear indication is one having a length greater than three times the width.
(b) An indication is considered as relevant when major dimensions greater than 1.5mm.

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION. INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY  CH. B V SIRISHA SR. ENGINEER/QA	REVIEWED BY  M.LAXMI RAJAM SR MANAGER / QA	APPROVED BY  T. MUNIRAGHAVULU AGM / QA
	Format no.: HYQA/QP/VSQP Rev.02		

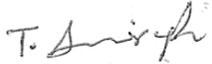
		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: BOLTING STEEL BARS FOR HIGH TEMP SERVICE BHEL SPEC: HY10665, R03, AA10620 R09, AA10622 R10				QP. NO: HYQA/SQP/CMM/RND/23-24/10 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 1 OF 5					
Sl No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
A													APPLICABLE FOR MANUFACTURERS ONLY
1.0													RAW MATERIAL INSPECTION
1.1	Raw Material (Billet, Bloom, Ingot)	Identification & correlation of material with TC's	Major	Verification	Each Melt	BHEL Spec,	BHEL Spec,	RMTC	✓	2	-	1	Refer Note 1
2.0													IN PROCESS INSPECTION
2.1	Heat Treatment	HT Parameters	Major	HT Chart	Each HT Batch	BHEL Spec,	BHEL Spec,	HT Chart/TC	✓	2	-	1	Refer Note 9.
2.2	Stress Relieving (if straightened)	HT Parameters	Major	HT Chart	Each HT Batch	BHEL Spec,	BHEL Spec,	HT Chart/TC	✓	2	-	1	Vacuum Degassing or other method of mfg. shall be reported in TC.
3.0													FINAL INSPECTION
3.1	Visual Examination & Dimensional Inspection	Workmanship, Visual & Dimension Check, Surface Finish, Freedom from defects	Major	Physical verification & Measurement	100%	BHEL Spec, PO / STD	BHEL Spec, PO / STD	Inspection Report	✓	2	1	-	10% Random witness by TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking & Punching on all bars. Refer Note 9
3.2	Hardness Test on bars (on both ends)	Hardness Test	Critical	Hardness Test	10% from each lot (Min. 10 bars)	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-	Mechanical Test Specimens shall be selected from Hardest & softest bars Refer Note 9
3.3	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-	Sample identification and its traceability to the lot shall be mentioned in TC.

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no.: HYQA/QP/VSQP Rev.02		

		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS ITEM: BOLTING STEEL BARS FOR HIGH TEMP SERVICE BHEL SPEC: HY10665, R03, AA10620 R09, AA10622 R10				QP. NO: HYQA/SQP/CMM/RND/23-24/10 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 2 OF 5					
SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
										P	W	V	
3.4	Product Analysis	Chemical Composition	Major	Chemical analysis	On Samples Identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer Note 9
3.5	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On Samples Identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	Refer Note 9
		Impact Test (>16mm sizes)	Major	Mech. Properties	On Samples Identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-	All 3 values to be mentioned in the TC Refer Note 9
3.6	PMI	Material Identification	Major	PMI	100%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-	10% Random witness by TPIA. Refer Note 9
3.7	NDT (UT) (above 40mm dia for AA10620 & HY10665)	Soundness of the material	Critical	UT	100%	BHEL Spec,	BHEL Spec,	NDT Report	✓	2	1	-	10% Random witness by TPIA. Refer Note 9, 19, 20
3.8	Short Term Creep Rupture Test – as applicable	Creep Test	Critical	Verification	As per STD	ASTM E 139	DIN EN 10213 part II / EN 10269.	NABL TC	✓	2	-	1	
3.9	Additional NDT -UT on final rounds before despatch	Soundness of the material	Critical	UT	100%	BHEL Spec/ Annexure-I of This QAP	BHEL Spec/ Annexure-I of This QAP	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
4.0	PRESERVATION, PACKING & MARKING												
4.1	Marking of the bars	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1#	1	Marking on the bars shall be correlated with the TCs. # Random Witness by TPIA
4.2	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	To prevent corrosion & damage during transportation
4.3	Completeness of all documentations	Verification	Major	Verification	100%	BHEL Spec, PO	BHEL Spec, PO	TC/ IR	✓	2	-	1	All TC's, IR shall be endorsed by TPIA.
B	APPLICABLE FOR TRADERS / AUTHORISED DISTRIBUTERS ONLY												

LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
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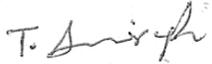
		BHARAT HEAVY ELECTRICALS LIMITED R.C. PURAM, HYDERABAD		STANDARD QUALITY PLAN FOR VENDOR ITEMS				QP. NO: HYQA/SQP/CMM/RND/23-24/10 Rev. No.: 05 DATE: 29.01.2026 VALID UPTO: 28.01.2029 PAGE 3 OF 5										
				ITEM: BOLTING STEEL BARS FOR HIGH TEMP SERVICE BHEL SPEC: HY10665, R03, AA10620 R09, AA10622 R10				SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency
															P	W	V	
1.1	Mill TC Verification	Chemical, HT, Mechanical, Hardness, UT, Short Term Creep Rupture Test	Major	Review	Each Melt	BHEL Spec,	BHEL Spec,	Mill TC	✓	2	-	1				Refer Note 1 Short Term Creep Rupture Test shall be NABL TC		
1.2	Visual Examination & Dimensional Inspection	Workmanship, Visual & Dimension Check, Surface Finish, Freedom from defects, Marking on the bars	Major	Physical verification & Measurement	100%	BHEL Spec, PO / STD	BHEL Spec, PO / STD	Inspection Report	✓	2	1	-				10% Random witness by TPIA. The following shall be ensure & certified: 1. Size & Length of each bar as per order. 2. Straightness of all bars. 3. Defect free surfaces. 4. Marking on the bars shall be correlated with the TCs. Refer Note 9		
1.3	Hardness Test on bars (on both ends)	Hardness Test	Critical	Hardness Test	10% from each lot (Min. 10 bars)	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-				Mechanical Test Specimens shall be selected from Hardest & softest bars Refer Note 9		
1.4	Identification of Test Sample	Test piece location & size	Critical	Visual	As per BHEL Spec	BHEL Spec,	BHEL Spec,	Inspection Report	✓	2	1	-				Sample identification and its traceability to the lot shall be mentioned in TC.		
1.5	Product Analysis	Chemical Composition	Major	Chemical analysis	On Samples Identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-				Refer Note 9		
1.6	Mechanical Properties on test samples	Tensile, Proof Stress, % Elongation & % Reduction	Critical	Mech. Properties	On Samples Identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-				Refer Note 9		
1.7		Impact Test (>16mm sizes)	Major	Mech. Properties	On Samples Identified	BHEL Spec,	BHEL Spec,	NABL TC	✓	2	1	-				Refer Note 9		
1.8	PMI	Material Identification	Major	PMI	100%	BHEL Spec,	BHEL Spec,	TC	✓	2	1	-				10% Random witness by TPIA. Refer Note 9		
1.9	NDT (UT) (above 40mm dia for AA10620 & HY10665)	Soundness of the material	Critical	UT	10%	BHEL Spec,	BHEL Spec,	NDT Report	✓	2	1	-				Refer Note 9, 19, 20		

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SI No	Component & Operations	Characteristics	Class	Type of Check	Quantum of Check	Ref Document	Acceptance Norms	Format of Record	* D	Agency			Remarks
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1.10	Additional NDT -UT on final rounds before despatch	Soundness of the material	Critical	UT	100%	BHEL Specn/ Annexure-I of This QAP	BHEL Specn/ Annexure-I of This QAP	NDT Report	✓	2	1	-	10% random witness per lot by TPIA. Refer note 8, 18, 19
1.11	Preservation and Packing	Visual	Major	Visual	100%	BHEL Spec,	BHEL Spec,	-	-	2	-	1	To prevent corrosion & damage during transportation
1.12	Completeness of all documentations	Verification	Major	Verification	100%	BHEL Spec, PO / STD	BHEL Spec, PO / STD	TC/ IR	✓	2	-	1	All TC's, IR shall be endorsed by TPIA.

Notes:

- BHEL TPIA SHALL CHECK RANDOM SAMPLES WITH TCs FROM EACH LOT FOR CORELATION. RAW MATERIAL LIKE INGOTS/BLOOMS/BILLETS REQUIRED FOR FORGINGS SHOULD BE PROCURED FROM BHEL APPROVED SOURCES ALONG-WITH TEST CERTIFICATE.
- THE BARS SHALL BE SUPPLIED IN HOT ROLLED / FORGED AND QUENCHED AND TEMPERED CONDITION.
- THIS QP SHOULD BE READ ALONG WITH BHEL SPEC, BHEL DRAWINGS / APPROVED DRAWINGS, DATA SHEET, BOM AND PO.
- DRAWING / DATA SHEET/ SPECIFICATION SHALL PREVAIL OVER QUALITY PLAN IN CASE OF ANY CONTRADICTION.
- BHEL RESERVES THE RIGHT FOR CONDUCTING REPEAT TEST, IF REQUIRED.
- INSPECTION TO BE OFFERED ONLY AFTER ENSURING THAT ALL DOCUMENTS (QUALITY PLAN, DRAWINGS, DATA SHEET, PURCHASE SPECIFICATIONS, ETC) ARE AVAILABLE AS PER PURCHASE ORDER.
- ANY OTHER TESTS/ CHECKS INDICATED IN SPECIFICATION, PO OR DRAWING & ANY ADDITIONAL CHECKS ENVISAGED BY TPI TO ENSURE WORKMANSHIP, FINISH, AESTHETICS, ETC. SHALL ALSO BE CONDUCTED AND WITNESSED/ VERIFIED BY TPI / CUSTOMER AS REQUIRED.
- REQUIREMENT OF CARRYING OUT THE TYPE TESTS AND OTHER TESTS SHALL BE AS PER BHEL SPEC/ APPROVED DRAWING.
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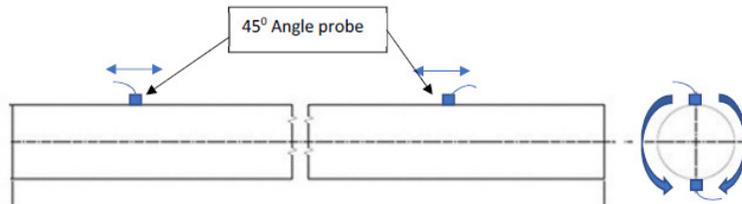
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Annexure-I

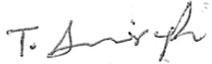
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Calibration shall be established by picking up 1.5mm SDH hole of IIW V1 block which is at a depth of 35mm. This indication amplitude shall be set to 80% and this shall be the amplitude reference line. Any indication crossing this amplitude shall be rejected.



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- Dye Penetrant Testing shall be performed for detection of any surface defects. Acceptance standards shall be as follows:
All surfaces to be examined shall be free of:
 - (a) relevant linear indications;
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 Note:
 - (a) A linear indication is one having a length greater than three times the width.
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LEGEND: P: - PERFORM, W: - WITNESS, V: - VERIFICATION, INDICATING 1: - BHEL / BHEL NOMINATED INSPECTION AGENCY, 2: - VENDOR / SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT / CHARACTERISTICS UNDER THE COLUMNS P, W & V. * D: RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED IN QA DOCUMENTATION.	PREPARED BY:  Ch. B V Sirisha Sr. Engineer/QA	REVIEWED BY:  M. L. Rajam Sr. Manager / QA	APPROVED BY:  T. Muniraghavulu AGM / QA
	Format no.: HYQA/QP/VSQP Rev.02		



(Attachment to Enquiry No. HPEP/CMM/AS Rounds/RC/2026 Due on Date 16.02.2026 for submission by 11.00 hrs to open from 14.00 hrs.)			
INSTRUCTIONS TO BIDDER (ITB)			
NOTE: Bidder to confirm in affirmative by typing "YES" or "Applicable Data" in the response column. Deviations, if any shall be recorded in deviations/comments column (Separate sheet can be attached if needed). Non deviatable clauses are indicated as "NON DEVIATABLE".			
Sl. No.	DETAILED TERMS & CONDITIONS	BIDDER RESPONSE (YES/NO)	DEVIATIONS / COMMENT
1	SCOPE OF SUPPLY:		
	Signed & Sealed offers are invited for the Scope of Supply of goods or services or both as detailed in the enquiry. Relevant enclosures/supporting documents / catalogue, if any shall be enclosed to the technical offer.		
2	DEFINITIONS		
A	'The Buyer' means BHEL-HPEP, Ramachandrapuram, Hyderabad-502 032 of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the companies Act having its registered office at BHEL House, Siri fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.		
B	'The Bidder' means the persons, firm, company or organization on whom the Purchase order is placed and shall be deemed to include the bidder's successors, representatives, heirs, executors and administrator as the case may be. It may also be referred to as Contractor, supplier or bidder.		
C	'Contract' shall mean and include the Purchase order incorporating various documents viz., Notice Inviting Tender (NIT), Offer, Letter Of Intent/Acceptance (LOI/LOA), Instruction to Bidders (ITB) and Special Conditions of Contract (SCC), specifications, inspection/quality plan, schedule of prices and quantities, drawings, if any, enclosed by Bidder/ provided by the Buyer or his authorized nominee and the samples or patterns if any to be provided under the provision of the contract. In case of any inconsistency or contradiction between any of the documents, the order of precedence shall be Purchase Order, LOI/LOA followed by Minutes Of Meeting (MOM), NIT, SCC, ITB.		
D	'Parties to the contract' shall mean the bidder and the buyer as named in the main body of the Purchase Order.		
E	'Goods/Material' shall include Works and Services which are incidental or consequential to supply.		
3	GENERAL INSTRUCTIONS:		
A	Mode of submission of offer shall be as indicated in SCC		Non Deviatable
B	The quotation should be neatly typed and free from over writing/ erasures. Any correction or addition must be authenticated. The offer including annexures and brochures should be submitted in English / Hindi. All Pages of Techno Commercial Bids (Main Pages), ITB, SCC should be signed and Stamped. If there is a conflict in case of bilingual submission, the submission in English will be final. Prices shall be quoted both in figures and words. In case of any discrepancy in value, the prices quoted in words shall be considered for evaluation and establishing L1 Status. Any discount / revised offer / bids submitted by a bidder on his own shall be considered, provided it is received on or before the due date and time of offer / bid submission (Part-1). Conditional discounts shall not be considered for evaluation of tenders.		Non Deviatable
C	Incomplete offers are liable for rejection.		Non Deviatable
D	Bidders to please note that the Terms & conditions contained in this document and SCC are to be read fully before submission of quotations.		Non Deviatable
E	Bidders are advised to comply with ITB and SCC, should there be any deviations (where deviations are permitted), it shall be entered in the deviation column. BHEL reserves the right to reject such offers or load the bid suitably for evaluation.		Non Deviatable
F	Offers shall be submitted directly, only by the bidder or by their authorized representative / agent and the offer should be in line with the regulatory guidelines (i.e. A valid Agency agreement between principal bidder and agent / representative shall be attached and the agreement shall cover the scope of services rendered by Agent, Agency Commission and any other information called for as per the regulatory guidelines). OEM / Mill details shall be provided if bidder is not a manufacturer. Bid envelopes shall bear the name of Bidder. In case of submission through authorized representative/agent, the name of representative/agent should also be mentioned apart from bidder name.		Non Deviatable
G	Offer received after the specified time and date of submission will be rejected. No further correspondence shall be entertained.		Non Deviatable
H	Unsolicited offers will not be considered.		Non Deviatable
4	OTHER PARTICULARS (Please indicate applicable data)		
A	Name of the Bid currency (freely tradable foreign currency for imports and Indian Rupees for indigenous purchase).		



B	Name of the Port of loading and Port of Discharge (applicable to imports).		
5	BID SUBMISSION PROCEDURE FOR CONVENTIONAL TENDER:		
A	For Single Part Bids:		
	The complete bid shall be submitted in a single sealed cover superscribing the Tender number and due date, addressed to Sr DGM/CMM, Vendor Complex, BHEL, Hyderabad and sent by appropriate mode to above address or dropped in tender box located at vendor complex on or before the specified time and date of submission of offers, preferably in the bidder's envelope. E- mail bids shall be sent to mail ID pricebid_hyd@bhel.in only as an attachment.		Non Deviatable
B.	For two-Part Bids:		
i	The offer is to be submitted in two parts viz., Techno-commercial Bid - (Part-I), with all technical specification & scope including bill of material etc., Earnest Money Deposit (EMD)(wherever applicable) and unpriced bid with all applicable Commercial Terms and Conditions, rates of agency commission, duties, taxes and other charges, Signed and Stamped ITB and SCC, <u>except the price</u> , shall be kept in a separate sealed cover, superscribing enquiry No. (Techno-Commercial Bid) and due date AND Price Bid (Part-II), containing ONLY the price (including agency commission, if any) and the applicable duties/taxes/other charges shall be kept in a separate sealed cover superscribing Enquiry no. (Price bid) & due date. Both the above covers (Part –I & II) shall be kept in a Third cover superscribing Enquiry no. & due date. Bidder can also submit offer through email. Technical offer to be submitted to mail ID technicalbid_hyd@bhel.in , and price bid to be submitted to mail ID pricebid_hyd@bhel.in only as an attachment. Interchanging the information in the mails may lead to rejection of the offer. Bidder shall have no claim on e-mail offers sent to any other e-mail ID. In case of e-mail offers, the mail subject should contain Enquiry Number, Due date and Bidder name. Bidder address including contact details shall be mentioned in the content of the mail. Without these details, the offer is liable for rejection. All techno commercial terms & conditions mutually agreed prior to price bid opening shall prevail and supersede any terms and conditions specified otherwise in price bid.		Non Deviatable
ii	The bidders whose bids are techno commercially not accepted will be informed and EMD shall be returned wherever submitted.		
iii	Bidders will be allowed to submit the impact on their quoted prices due to changes in technical scope, specifications, and commercial terms/conditions as specified in NIT which in the opinion of BHEL , warrant changes in prices.		Non Deviatable
C	Bids shall be opened on due time and date in the presence of bidders who may like to be present. Only one representative of each bidder shall be permitted to attend the bid opening. Only the price bids of bidder (in case of two part bid) whose techno commercial bids are accepted will be opened later on a specified date.		Non Deviatable
6	DELIVERY TERMS		
A	Indigenous Purchase		
	a. Terms of Delivery for dispatches to BHEL Hyderabad (HPEP) shall be FOR Destination. b. Terms of Delivery for Direct Dispatch (DD) items shall be Ex Works. i. In case specified in SCC that insurance is in customer/BHEL scope, price quoted shall include Freight charges up to Destination. ii. Otherwise, price quoted shall include Freight and Insurance upto Destination. However, beneficiary for insurance shall be BHEL.		
B.	Imports		
	The goods shall be delivered on FCA capital airport basis in case of freight by Air and CIP basis in case of freight by Sea.		
7	Documentation for Payment		
A	Indigenous Purchase		
	Following documents shall be submitted immediately on dispatch of material to BHEL HPEP / Site a. Two numbers of Original Tax Invoice (Refer ITB clause no 11 for Tax Compliance)/ e-invoice of GST Portal if applicable) b. Packing List - clearly showing number of packages, gross weight and net weight. c. Test/Warranty/Guarantee certificates, O&M Manual (If specified in SCC) d. Insurance intimation/declaration certificate e. Pre-dispatch Inspection report /Third Party Inspection Certificates. f. Consignee copy of LR signed & stamped by Customer/Site representative for DD Items g. e-waybill h. Any other documents as specified in SCC.		Non Deviatable



B	<p>Softcopies of the above documents shall be uploaded in SUVIDHA portal https://suvidha.bhel.in/suvidha/ or https://hpep.bhel.com/mm/main.jsp Vendor Bills tab. immediately after dispatch of the material. Upload of Documents is mandatory for material Entry.</p> <p>Imports</p> <p>i) Bidder shall inform BHEL the readiness of material along with packing details 30 days in advance from the date of delivery. For Hazardous cargo/DG cargo, supplier must provide the following documents prior to handing over shipment to freight forwarder, wherever freight is in BHEL scope:</p> <ol style="list-style-type: none">1. Valid MSDS2. DGD certificate with appropriate UN numbers.3. Labelling and marking on DG cargo along with photo of packaging.4. Self-declaration for consignment5. Packaging Certificate as per DG Standards6. TSA Approved Truckers details to be provided to forwarder at the time of shipment <p>In addition to the above, supplier should ensure to comply all IATA DG regulations, if any new requirement is added in future.</p> <p>ii). Bidder shall also upload the soft copy of the dispatch documents consisting of BL / AWB, Invoice, delivery note, packing list, country of origin & Test certificates and other documents as specifically indicated in the SCC in PRADAN Portal (https://hpep.bhel.com/mm) within Five days from the B/L date for sea shipment and One day from AWB date for Air shipment and sent to email ids: mssea@bhel.in, msair@bhel.in, cmmfe@bhel.in.</p> <p>iii) AWB/BL must contain the information of BHEL GST no., and PAN no.</p> <p>iv) Air Shipments: Bidder shall ensure the following</p> <ol style="list-style-type: none">a) Port of discharge -- Mumbai/Chennai/Hyderabad (as indicated in SCC).b) Consignee shall be BHEL, Hyderabad. Material shall be air freighted through cargo mode only and not through Courier.c) Upon handing over the cargo to the forwarder, bidder shall ensure the acknowledgement receipt with wordings "Cargo handed over in sound condition for Air freighting". Note: Warehouse receipt will not be considered for penalty calculations.d) In case of CIF/ shipments, bidder shall also inform BHEL the information about discharge port agent details and cargo arrival information within one day from the date of Shipment.e) Following dimensions of single package may be noted.<ol style="list-style-type: none">i). Maximum dimension of the cargo(ODC) -- 125" x 88" x 63"ii). Maximum weight of the cargo -- 3.5 MT.If any package dimension or weight exceeds the above set limits, it will be treated as Over Dimension Cargo (ODC) or Over Weight Cargo and bidder shall inform BHEL 30 days in advance to the delivery date to enable BHEL to finalize the freight forwarder.f). If package falls under Hazardous category, bidder shall communicate BHEL 30 days in advance period with document support. <p>v) Sea Shipments:- bidder shall ensure the following</p> <ol style="list-style-type: none">a). Port of discharge -- Nhavaseva/Mumbai/Chennai.b). Place of Delivery / Final Destination for CIP shipments - Nhavaseva CFS / Chennai CFS.c). In case of FOB shipments, bidder shall handover the material to BHEL nominated forwarder and obtain the cargo receipt.d). If the material cannot be containerized in 20 or 40 GP containers, an advance information of 30 days prior to the delivery date shall be communicated to BHEL for necessary arrangements and finalisation of freight forwarder.e). For CIP shipments<ol style="list-style-type: none">1. In case of FCL shipments, Detention free period must be 14 days.2. Bidder shall also inform BHEL the information about discharge port agent details and cargo arrival information within 5 days from the date of Shipment.3. No charges for the services rendered till place of destination will be payable by BHEL. In case liner / forwarder insist for charges, not in the scope of BHEL, the same will be adjusted from bidder account.4. In case of CIF shipments -- Bidder must select a forwarder/liner whose discharge port published tariff for THC and other services is available. Any charges over and above the published tariff will not be borne by BHEL or will be adjusted from the bidder's bill.5. bidder must insure the cargo for 110% of material value including the freight amount. <p>(vi). Recovery charges for non-submission of documents: - Bidder shall submit all the required documents to BHEL as prescribed in the Purchase order and NIT.</p>		
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If BHEL incurs any charges such as Penalty, demurrage, container detention, wharfage, storage, Ground rent etc., due to non - compliance / non - submission of documents prescribed in Purchase Order/ NIT/Letter of credit, the same shall be recovered from the bidder as under:
 1. EUROPE/USA/Black Sea/ Far East/Middle East/South East sector

A. For FOB Sea Consignments:-

Penalty for late submission / negotiation of documents beyond 14 days shall be as under:

Sl. no	Period (From Date of Bill of Lading)	Recoverable Charges	Recoverable Charges per day per container	
		LCL per week/ Break bulk cargo per day	20FT Container	40FT Container
i	Upto 14th day	Nil	Nil	Nil
ii	15th day onward	USD 10	USD 110	USD 200

B. For CIP Sea Shipments: -

Bidder shall provide rates for detention charges after free period at the time of offer itself in case of engagement of 20FT Container and 40FT category. In case of late presentation of documents to the bank recovery will be effected from the Bidder as per the rates quoted by the Bidder at the time of offer in this regard.

In case of Break bulk cargo and LCL, Demurrage charges shall be recovered at the rate of USD 1 per Ton per day and storage charges at the rate of USD 10 per week respectively shall be charged as late presentation charges.

(vii) Description of items in invoice, packing list, BL / AWB or LR shall be same as PO item description. Bidders shall ensure that invoice shall contain PAN nos. of both bidder and BHEL along with other tax related numbers. BHEL PAN AAACB4146P and BHEL TAN HYDB00086C Any other additional documents sought by the statutory authorities, the same shall be produced by the bidder on priority basis.

(viii) Bidder shall provide package details including number of packages, gross weight, net weight etc.

(ix) The bidder shall provide the following documents at the time of submission of offer:

a) No Business Connection in India declaration issued by the bidder as per the format specified. (or)

b) (i) No Permanent Establishment in India declaration issued by the bidder as per the format specified.

(ii) Tax Residence Certificate issued by the bidder's tax authorities.

(iii) Form 10F, as attached in Annexure V, to be issued by the bidder.

c) In case the bidder has a Business Connection in India as per Section 9 of Income Tax Act or significant economic presence in India as per rule 11 UD of IT Act or Permanent Establishment in India as per Article 5 of Double Taxation Avoidance Agreement between India and the bidder's country, the bidder shall provide a withholding tax order issued by the Indian Income Tax authority for recovery of applicable tax.

8	Delivery Schedule		
	The tendered goods shall be delivered within the period stipulated in NIT/ SCC as accepted. Inordinate delay/early supply are liable for rejection/ Hold on payment.		Non Deviatable
9	Pricing Terms		
	Quoted price shall be inclusive of Packing & Forwarding and shall remain firm and valid during the execution of PO. Offers with PVC will be rejected outright except in cases where specifically called for in the SCC.		Non Deviatable
10	PRICE VALIDITY :		
	Unless otherwise specified, offer shall be valid for a period of 90 days from the date of bid opening (Technical bid /part-I in case of two part bid). However the prices quoted for spare parts of the Main equipment shall be kept valid for a period as specified in SCC.		Non Deviatable



11	Taxes & Duties (RATE TO BE INDICATED by the bidder against the space provided)	
A	<p>Indigenous Purchase</p> <p>i) Only valid GST registered bidders will be considered for the tender. The GSTIN of the bidder should be clearly mentioned in the offer.</p> <p>ii) If bidder is exempted from GST registration under any provision of the GST Law, a declaration with due supporting documents should be furnished for considering the offer.</p> <p>iii) Bidder to quote the applicable taxes in the following manner:</p> <ul style="list-style-type: none"> - Harmonized System of Nomenclature (HSN) of Goods - Services Accounting Code(SAC) of Services. - IGST/CGST/SGST/UTGST: Rate of Tax to be quoted as extra in % against the space provided <p>iv) Bidders to ensure correct applicability of IGST/CGST/SGST/UTGST based on the Inter / Intra state movement of goods/services.</p> <p>v) In case Bidder has opted for GST Composition Scheme, the same may be stated explicitly both in their technical and price bids. An undertaking to the effect that any change in the status of the bidder will be intimated.</p> <p>vi) Any other taxes & duties not covered anywhere above may be indicated separately.</p> <p>Taxes deducted at source:</p> <ul style="list-style-type: none"> - TDS as per the extant statutes shall be deducted. - In case bidder does not provide PAN details, higher rate of tax shall be deducted as per the Act. - Concessional certificates, if any, should be provided well in time for lower deduction of tax. 	Non Deviatable
	<p>Terms & Conditions to be complied</p> <p>1. All invoices (incl. Credit Notes, Debit Notes) to contain BHEL HPEP GSTIN ie 36AAACB4146P1ZG. Invoices submitted should be in the format as specified under GST Law. All details as mentioned in Invoice Rules including Dealer GST registration number (GSTIN), invoice number with date of issue, quantity, rate, value, taxes with nomenclature – CGST, SGST, UGST, IGST mentioned separately, HSN Code / SAC Code etc.</p> <p>2. Reimbursement of GST amount will be made only upon completion of the following:</p> <ol style="list-style-type: none"> i. Bidder declaring such invoice in their GSTR-1 Return/ IFF ii. Receipt of Goods or Services and Submission of Tax invoice by BHEL iii. The tax invoice is reflected in the GSTR2B of BHEL, HPEP (buyer). Payment of GST will be made only if it is matching with data uploaded by the Bidder in GST portal. <p>3. In case of discrepancy in the data uploaded by the bidder in the GSTN portal vis-a-vis the tax invoice or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit. The same would be available in PRADAN Portal for the bidder's information. Bidder 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 for processing of such invoices.</p> <p>4. In cases where invoice details have been uploaded by the bidder but failed to remit the GST amount to GST Department within stipulated time, then GST on the invoices in default will be recovered from the bidder along with the applicable interest.</p> <p>5. In case GST credit is delayed/denied to BHEL due to non/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, such GST amount will be recoverable from bidder along with interest levied/ leviable on BHEL.</p> <p>6. GST TDS deducted as per GST Act, is uploaded in GSTN portal along GSTR7. Bidders can directly download the GST TDS Certificate from the GSTN Portal.</p> <p>7. Bidders to note that Rules & Regulations pertaining to E-way bill system are to be strictly adhered to, as and when notified by Govt. authorities.</p> <p>8. Vendors who fall under the E-Invoice regulations, i.e., having an annual turnover of Rs. 10 crores (Rs 5 crore w.e.f 01.08.2023) in the previous year shall issue e-invoice in line with Rule 48(4) of CGST Rules failing which GST amount will not be reimbursed to the vendor even if the other requirements are fulfilled.</p> <p>9. In case the vendor is exempted by the GST department under the Rule 48(4) of CGST Rules from issuing E-invoice, a declaration as prescribed in the Notification 17/2022 - Central Tax dated 01-08-2022 shall be provided on the invoice.</p> <p>10. Vendors who do not fall under the E-Invoice regulations, i.e., whose annual turnover is less than Rs. 10 crores (Rs 5 crore w.e.f 01.08.2023) in the previous year have to give an undertaking indemnifying BHEL that the vendor is not falling under the E-invoice requirement category and that in case of any breach of this E-invoicing requirement, the vendor indemnifies BHEL of any consequences that may arise due to such a breach.</p> <p>11. No GST shall be levied on liquidated damages / penalty.</p>	



B.	<p>Foreign Purchase (Imports)</p> <p>The offered price shall be inclusive of all the Taxes and duties as applicable in country of export / country of dispatch for the quoted price. Taxes deducted at source: a. In case of goods or services subject to Income tax in India, such tax as per the extant statute shall be recovered. b. In case bidder does not provide necessary documents for beneficial taxation (Refer clause 7-B-(ix) a-c of ITB), the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act.</p>		Non Deviatable
<p>12 Payment Terms: Unless otherwise specified in SCC, following shall be the terms of Payment.</p>			
A	<p>Indigenous: a. Micro & Small Enterprises (MSEs) - 100% Direct EFT payment within 45 days b. Medium Enterprises - 100% Direct EFT payment within 60 days c. Non MSME Bidders - 100% direct EFT Payment within 90 Days Note A. Above due date is reckoned from the date of Receipt of material or 15 days from the date of submission of complete set of documents as per PO whichever is later. Objections, if any on the invoice, available on SUVIDHA portal need to be closed. In such instances, due date is reckoned from the closure of objections. Vendors are advised to get familiarized with the document exchange feature on SUVIDHA portal. Payment will be made for Material accepted value. B. MSEs (covered under MSME Act) need to register and renew periodically and update the same with BHEL C. The taxes that are reimbursed are limited to applicable taxes as on the Purchase Order delivery date or the amount actually paid whichever is less. D. Adherence to the above time schedule of payment is contingent upon Bidder complying with GST provisions and availment of Input Tax Credit by BHEL before the date of payment. E. In case of packaged items, 10% of supply value will be retained till completion of total supplies. F. Bidders to comply with clause 11 on GST requirements G. MSE benefits are not applicable to Traders / Wholesalers registered as MSEs. G. MSME vendors may avail the facility of invoice discounting through Trade Receivables Discounting System(TREDS) platforms like RXIL, INVOICEMART, M1XCHANGE and any other platforms onboarded from time to time.</p>		
B	<p>Imports: i) 100% payment (less Indian Agency Commission, if any) shall be through Wire Transfer with a credit period of 45 days - Cash Against Documents (CAD) ii) In case Bidder opts for Letter of Credit payment, the LC Usance period shall be 90 days with respective bank charges to respective accounts and loading of 0.50% iii) Indian Agency commission if payable and so specified in the Purchase order shall be paid in Indian Rupees, considering the SBI TT selling exchange rate, as on the date of payment after successful completion of the contract.</p>		
C	<p>Conditions for LC: a. LC validity period will be 90 days and for any extension, applicable charges will be to bidder's account. b. LC will be opened after successful completion of pre dispatch inspection prior to the scheduled / agreed delivery date. LC will be opened within 15 bank working days from the date of request.</p>		Non Deviatable
D	<p>Conditions for both Indigenous & Foreign Bidders: a. In case Bidders insist for lesser Credit period and BHEL accepts, a loading of 0.60% for every 15 days reduction will be applicable. b. In case PBG as required is not furnished, Payment will be released deducting the BG amount, which will be paid after expiry of warranty period against submission of supplementary claim. c. Payment does not imply in any respect whatsoever a waiver of Buyer's right to performance of the Order. Buyer is entitled to set off claimable debts against claimable liabilities with the bidder by means of a setoff Note.</p>		Non Deviatable
E	<p>Wherever EMD is applicable, the EMD will be paid back to unsuccessful bidders within fifteen days after award of the contract. Successful bidder's EMD will be retained till submission of Performance Bank Guarantee (PBG). Tender Fee wherever applicable is not refundable. No interest shall be payable by BHEL on earnest money or security deposit or any money due to the contractor by BHEL.</p>		Non Deviatable

13	Penalty clause:		
	<p>In the event of delay in supply /part-supply of goods, Penalty as detailed below is leviable</p> <p>a. Penalty of 0.5% per week or part there of shall be levied, limited to a max of 10% (ten percent) of delayed portion value / order value (as specified in SCC).</p> <p>b. Penalty applicable for delay in documentation is as per SCC.</p> <p>c. Date Reckoned for Penalty</p> <ul style="list-style-type: none"> - Indigenous Orders with delivery terms FOR HPEP: C Note date. - Indigenous Orders (Others): Date of e-waybill. - Imports: For CIP/CIF Orders: IGM date - Imports: For FOB Orders: AWB / BL date - Imports: <ul style="list-style-type: none"> For FCA Orders: <ul style="list-style-type: none"> Date of acknowledgement from Freight Forwarder. For Ex Work Orders (both air and sea): <ul style="list-style-type: none"> Latest of Air Freight Request (AFR), Invoice, Packing List, Inspection date (if applicable) or any other documentary evidence confirming material readiness. <p>d. In case of Deviation to above Penalty clause, loading applicable to the extent to which not agreed by Bidder.</p> <p>e. Timelines as mentioned in the Annexure 1 will be considered for reckoning delivery.</p>		
14	Excess materials supplied beyond tolerance limit as specified in PO will not be paid and bidder may raise credit note for the excess/unaccepted material as per GST law.		Non Deviatable
15	Rejected materials , if any, shall be collected by the bidder within 90 days of such communication to the bidder. Beyond this period the bidder forfeits their right to the materials.		Non Deviatable
16	<p>Guarantee / Warranty Period:</p> <p>Wherever required, and so provided in the specifications/SCC/Purchase Order, the bidder shall guarantee that the goods supplied shall comply with the specifications laid down, for materials, workmanship and performance.</p> <p>a. Guarantee period shall be 12 months from the date of commissioning or 18 months from the date of supply whichever is earlier.</p> <p>b. In case erection & commissioning is involved, guarantee period shall be 12 months from the date of commissioning.</p> <p>c. In case of equipment bought as a package which are intended to be incorporated in installations or systems, the guarantee period shall be 12 months from the date of commissioning of such equipment.</p> <p>The guarantee period shall be extended by the period during which the goods are not in compliance. If the delivery is found to be non-complaint, bidder shall replace, repair or re-execute the as requested by BHEL. If the bidder defaults on his obligations, buyer has the right to proceed to replace, repair or re-execute at the bidder's expense.</p> <p>A guarantee period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery.</p> <p>Loading for deviation:</p> <p>In case warranty specified in SCC is over and above the period mentioned in b & c above; loading will be 1% per annum for the deviation in warranty end period, on the contract value. Expected commissioning period is as indicated in SCC.</p>		Non Deviatable
17	<p>PERFORMANCE BANK GUARANTEE (PBG) (Applicable in case mentioned in SCC)</p> <p>In case enquiry specifically spells out PBG requirement, PBG is to be submitted by Bidder in requisite format as per Annexure VII.</p> <p>Further detailing on PBG as specified in SCC.</p> <p>The PBG shall be for the performance of the goods and shall remain binding notwithstanding such variations, alterations or extensions of item as may be made, give, conceded or agreed to between the Bidder and BHEL under these Terms and conditions or otherwise.</p>		Non Deviatable

NOTE: Deviations (Commercial as well as Technical) from the tender specifications and conditions are generally not acceptable. However, deviation if any, shall be brought out clearly with proper justification in the offer. The deviation, if considered by BHEL, shall be loaded for comparison, while evaluating the offer. If a bidder unconditionally withdraws any deviation before price bid opening, the same shall not be loaded. Loading criteria in respect of major commercial conditions where deviations if any are accepted shall be as per clause No.18. The Bidders may specifically note the following.

<p>18</p>	<p>Evaluation and Loading Criteria:</p> <p>i) Evaluation Currency for this tender shall be “INR”.</p> <p>ii) Evaluation of prices shall be done item-wise unless otherwise specified in the SCC.</p> <p>iii) Evaluation shall be on the basis of delivered cost, i.e. “Total Cost to BHEL” w.r.t the finalized technical scope and commercial conditions (after considering incidence of applicable taxes and duties and loading).</p> <p>iv) In the course of evaluation, if more than one Bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 Bidders. In case more than one Bidder happens to occupy the L1 status even after soliciting discounts, the L1 Bidder shall be decided by a toss/draw of lots, in the presence of the respective L1 Bidders or their representatives. Ranking will be done accordingly. BHEL decision in such situations shall be final and binding.</p> <p>INDIGENOUS</p> <p>a. Bidder shall ensure to indicate the applicable taxes against each line item, failing which the same will be considered as inclusive/NIL.</p> <p>b. Ex-works offers received (as against FOR Destination mentioned in enquiry) shall be loaded by 2% of Ex-works value.</p> <p>c. GST and any other charges quoted will be added to the base price. However, in case input credit is available for GST (SGST, CGST/IGST), the same shall be excluded for arriving at “Total Cost to BHEL”</p> <p>IMPORTS</p> <p>For evaluation of offers in foreign currency, exchange rate (TT selling rate of State Bank of India) as on the date of bid opening (Part-I, in case of two-part bids) shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.</p> <p>In case of foreign Bidders, the quoted CIP price shall be loaded by the following factors to arrive at “Total Cost to BHEL”:</p> <ul style="list-style-type: none"> - Import duty as applicable on the date of Part-I bid opening. - Loading will be as per the table below <table border="1"> <thead> <tr> <th></th> <th>Ex Works</th> <th>FOB/F CA</th> <th>CIF/C FR</th> <th>CIP</th> </tr> </thead> <tbody> <tr> <td>Foreign Inland freight and insurance</td> <td>2%</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Marine freight and marine insurance</td> <td>3%</td> <td>3%</td> <td></td> <td></td> </tr> <tr> <td>Destination Port handling charges</td> <td>0.50%</td> <td>0.50%</td> <td>0.50%</td> <td></td> </tr> <tr> <td>clearing charges & inland freight and insurance</td> <td>2%</td> <td>2%</td> <td>2%</td> <td>2%</td> </tr> </tbody> </table> <p>COMMON LOADING FOR IMPORTS & INDIGENOUS that will be added for arriving the "Total Cost to BHEL"</p> <ul style="list-style-type: none"> A. Loading on Deviated Penalty clause shall be 10% or to the extent to which the bidder has opted for deviation. B. Loading for payment terms as per clause 12 of ITB C. Loading for deviation in Warranty & PBG as per clause 16,17. 		Ex Works	FOB/F CA	CIF/C FR	CIP	Foreign Inland freight and insurance	2%				Marine freight and marine insurance	3%	3%			Destination Port handling charges	0.50%	0.50%	0.50%		clearing charges & inland freight and insurance	2%	2%	2%	2%
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<p>19</p>	<p>Procurement directly from the manufacturers/ suppliers shall be preferred. However, no agent shall 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 from the manufacturer/ supplier and the agent, bid received from the agent shall be ignored.</p>																									
<p>20</p>	<p>RIGHT OF REJECTION /NON- PLACEMENT OF PO: BHEL reserves the right to accept or reject any or all bid/s in full or part without assigning any reason whatsoever.</p>																									
<p>21</p>	<p>INTEGRITY PACT</p> <p>Bidders shall have to enter into Integrity Pact with BHEL as per Annexure VI - for Tender value of rupees two crores and above and shall be signed by the authorized signatory along with the offer, failing which Bidder's offer will be rejected.</p>																									
<p>22</p>	<p>Public Procurement</p>																									
<p>A</p>	<p>Make in India</p> <p>For this Procurement, the local content to categorize a bidder as a Class I local bidder / Class II local bidder / Non-Local bidder and purchase preference to Class I local bidder, is as defined in Public Procurement (Preference to Make in India) order No P-45021/2/2017-PP(BE-II) dated 04-06-2020 issued by DPIIT as amended from time to time.</p> <p>Proforma for self-certification for minimum local content and auditor's certification is given in Annexure III.</p>																									

B	Any Bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with competent authority. GOI website https://www.mea.gov.in/ to be referred for latest details of competent authority and exemptions . Proforma for self-certification for compliance is given in Annexure IV.												
C	Startups: For Start-ups duly registered with DPIIT (Copy of certificate to be provided), condition of prior turnover and prior experience in Public Procurement may be relaxed subject to meeting of Quality and Technical Specifications. Startups are exempt from paying EMD.												
23	Benefits earmarked for Purchase from Micro & Small Enterprises (MSEs) – Indigenous Purchase												
A	<p>All Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy are exempt from Paying EMD. NSIC/UDYAM registered bidders shall submit NSIC/UDYAM Certificate along with bid documents.</p> <p>Any Bidder falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer.</p> <table border="1"> <thead> <tr> <th>Type under MSE</th> <th>SC/ST Owned</th> <th>Women Owned</th> <th>Others (excluding SC/ST & Women Owned)</th> </tr> </thead> <tbody> <tr> <td>Micro</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Small</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Note: If the bidder does not furnish the above in the tender, offer shall be processed construing that the bidder is not falling under MSE category.</p> <p>Date to be reckoned for determining the deemed validity will be the last date of Technical bid submission. Non- submission of such document will lead to consideration of their bid, at par with other bidders and MSE status of such bidders shall be shifted to Non- MSE Category till the bidder submits these documents.</p>	Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)	Micro				Small			
Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)										
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Small													
B	MSE suppliers can avail the intended benefits in respect of the procurements related to the Goods and Services only (Definition of Goods and Services as enumerated by Govt. of India vide Office Memorandum F. No. 21(8)/2011-MA dtd. 09/11/2016 office of AS & DC, MSME) and subsequent amendments & clarifications, if any. Documents NSIC/UDYAM Certificate submitted by the bidder shall be verified by BHEL for rendering the applicable benefits.												
C	If an enterprise falling under MSME category as defined in the Act, graduates to a higher category from its original category or beyond the purview of the Act, it shall continue to avail all non-tax benefits of its original category notified by the Ministry of Micro, Small and Medium Enterprise for a period of three years from the date of such graduation to the higher category.												
D	BHEL HPEP is registered with TReDS (RXIL , M1XCHANGE , InvoiceMart) platform. MSME bidders are requested to get registered with TReDS(RXIL / M1XCHANGE / InvoiceMart/ exchanges added from time to time) platform to avail the facility as per the GOI guidelines.												
24	Inspection Measuring and Test Equipment (IMTE) used by the Bidder/ Contractor or sub-contractor shall be calibrated, maintained and controlled. Calibration shall be valid and IMTE maintained in sound condition during usage.												
25	ISO-9001, ISO14001 & OHSMS 45001 shall be complied.												
26	If BHEL registered supplier is not quoting against this NIT, supplier shall send regret letter positively with valid reasons for not participating. Repeated lack of response on the part of supplier may lead to deletion of such registered supplier from BHEL's approved supplier's list as per BHEL SEARP Guidelines.												
27	<p><u>BREACH OF CONTRACT, REMEDIES AND TERMINATION</u></p> <p>27.1 BREACH OF CONTRACT: The following shall amount to breach of contract:</p> <ol style="list-style-type: none"> Non-supply of material/ non-completion of work by the Supplier/Vendor within scheduled delivery/ completion period as per contract or as extended from time to time. The Supplier/Vendor fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery/ completion period to justify that supplies shall be inordinately delayed beyond contractual delivery/ completion period. The Supplier/Vendor delivers equipment/ material not of the contracted quality. The Supplier/Vendor fails to replace the defective equipment/ material/ component as per guarantee clause. Withdrawal from or abandonment of the work by the Supplier/Vendor before completion as per contract. Assignment, transfer, subletting of Contract by the Supplier/Vendor without BHEL's written permission resulting in termination of Contract or part thereof by BHEL. Non-compliance to any contractual condition or any other default attributable to Supplier/Vendor. Any other reason(s) attributable to Vendor towards failure of performance of contract. In case of breach of contract, BHEL shall have the right to terminate the Purchase Order/ Contract either in whole or in part thereof without any compensation to the Supplier/Vendor. Any of the declarations furnished by the contractor at the time of bidding and/ or entering into the contract for supply are found untruthful and such declarations were of a nature that could have resulted in non-award of contract to the contractor or could expose BHEL and/ or Owner to adverse consequences, financial or otherwise. Supplier/Vendor is convicted of any offence involving corrupt business practices, antinational activities or any such offence that compromises the business ethics of BHEL, in violation of the Integrity Pact entered into with BHEL has the potential to harm the overall business of BHEL/ Owner. <p>Note- Once BHEL considers that a breach of contract has occurred on the part of Supplier/Vendor, BHEL shall notify the Supplier/Vendor by way of notice in this regard. Contractor shall be given an opportunity to rectify the reasons causing the breach of contract within a period of 14 days.</p> <p>In case the contractor fails to remedy the breach, as mentioned in the notice, to the satisfaction of BHEL, BHEL shall have the right to take recourse to any of the remedial actions available to it under the relevant provisions of contract</p>												

	<p>27.2 Remedies in case of Breach of Contract.:</p> <p>i. Wherein the period as stipulated in the notice issued under clause 27.1 has expired and Supplier/Vendor has failed to remedy the breach, BHEL will have the right to terminate the contract on the ground of "Breach of Contract" without any further notice to contractor.</p> <p>ii. Upon termination of contract, BHEL shall be entitled to recover an amount equivalent to 10% of the Contract Value for the damages on account of breach of contract committed by the Supplier/Vendor. This amount shall be recovered by way of encashing the security instruments like performance bank guarantee etc available with BHEL against the said contract. In case the value of the security instruments available is less than 10% of the contract value, the balance amount shall be recovered from other financial remedies (i.e. available bills of the Supplier/Vendor, retention amount, from the money due to the Supplier/Vendor etc. with BHEL) or the other legal remedies shall be pursued.</p> <p>iii. Wherever the value of security instruments like performance bank guarantee available with BHEL against the said contract is 10% of the contract value or more, such security instruments to the extent of 10% contract value will be encashed. In case no security instruments are available or the value of the security instruments available is less than 10% of the contract value, the 10% of the contract value or the balance amount, as the case may be, will be recovered in all or any of the following manners:</p> <p>iv. In case the amount recovered under sub clause (a) above is not sufficient to fulfil the amount recoverable then; a demand notice to deposit the balance amount within 30 days shall be issued to Supplier/Vendor.</p> <p>v. If Supplier/Vendor fails to deposit the balance amount within the period as prescribed in demand notice, following action shall be taken for recovery of the balance amount:</p> <p>a). from dues available in the form of Bills payable to defaulted Supplier/Vendor against the same contract.</p> <p>b). If it is not possible to recover the dues available from the same contract or dues are insufficient to meet the recoverable amount, balance amount shall be recovered from any money(s) payable to Supplier/Vendor under any contract with other Units of BHEL including recovery from security deposits or any other deposit available in the form of security instruments of any kind against Security deposit or EMD.</p> <p>vi. In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against defaulted supplier/Vendor.</p> <p>vii. It is an agreed term of contract that this amount shall be a genuine pre-estimate of damages that BHEL would incur in completion of balance contractual obligation of the contract through any other agency and BHEL will not be required to furnish any other evidence to the Supplier/Vendor for the purpose of estimation of damages.</p> <p>viii. In addition to the above, imposition of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract.</p> <p>ix. Non-performance of contract attracts penal provisions in line with BHEL guidelines for Suspension of Business Dealings (SBD).</p> <p>Note: 1) The defaulting Supplier/Vendor shall not be eligible for participation in any of the future enquiries floated by BHEL to complete the balance work. The defaulting contractor shall mean and include:</p> <p>(a) In case defaulted Supplier/Vendor is the Sole Proprietorship Firm, any Sole Proprietorship Firm owned by same Sole Proprietor.</p> <p>(b) In case defaulted Supplier/Vendor is The Partnership Firm, any firm comprising of same partners/ some of the same partners; or sole proprietorship firm owned by any partner(s) as a sole proprietor.</p>
28	Any other terms and conditions of the bidder attached / referred against the tender enquiry will not be considered.
29	All drawings, patterns and tools supplied by BHEL or made at BHEL's expense are BHEL's property. These cannot be used or referred to any other party and must be used only in the execution of BHEL's orders.
30	Any amount payable by the bidder under any of the conditions of this contract shall be liable to be adjusted against any amount payable to the bidder under any other work / contract awarded by BHEL HPEP or any other BHEL Units. This is without prejudice to any other action as may be deemed fit by BHEL.
31	The bids of the bidders who are on the banned list and also the bids of the bidders, who engage the services of the banned firms, will be rejected. The list of firms banned by BHEL is available on BHEL web site: www.bhel.com
32	Ordering and confirmation of order
	<p>The bidder shall send the order acceptance within one week from the date of LOI/Purchase order or such other period as specified/agreed by the Buyer. Buyer reserves the right to revoke the order placed if the order confirmation differs from the original order placed. Buyer shall be legally bound, only if agreed for any deviation explicitly in writing. The acceptance of deliverables or supplies by Buyer as well as payments made in this regard shall not imply acceptance of any deviations. The Purchase order will be deemed to have been accepted if no communication to the contrary is received within one week (or the time limit as specified /agreed by the Buyer) from the date of P.O.</p> <p>Buyer, is at liberty to send signed P.O. through electronic media such as e-mail and the receipt of which shall be treated as receipt of order.</p>
33	Execution
	The whole contract is to be executed in the most workman like manner, substantial and approved as per the contracted terms.
34	Progress Report
	<p>The bidder shall render such report as to the progress of work and in such form as may be called for by the Buyer from time to time. The submission and acceptance of such reports shall not prejudice the rights of the buyer in any manner. Bidder shall communicate to BHEL immediately, the change of address, ownership, contact person(s), the mobile numbers and e-mail of the dealing person concerned.</p> <p>Milestones shall be periodically updated by bidder through PRADAN Portal (https://hpep.bhel.com/mm/). Non updation will adversely affect service rating of bidder performance.</p>

35	Non-disclosure Obligations
	<p>Drawings, technical documents or other technical information received by one party shall not without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are confidential and binding only to the extent that they are by reference expressly included in the contract.</p> <p>The bidder shall, as per agreed date/s but not later than the date of delivery, provide free of charge any information and/or drawings which are necessary to permit the Buyer to erect, commission, operate and maintain the product. Such information and drawings shall be supplied as specified in technical specification.</p> <p>All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the contract shall continue to be the property of the submitting party.</p> <p>The bidder shall provide Buyer with all information pertaining to the delivery in so far as it could be of importance to Buyer. The bidder shall not reveal confidential information to its own employees not involved with the tender/contract and its execution and delivery or to third parties, unless Buyer has agreed to this in writing beforehand. The bidder shall not be entitled to use the Buyer's name in advertisements and other commercial publications including website without prior written permission from Buyer.</p> <p>In the event of violation of the confidentiality as agreed, BHEL will take legal action as deemed fit. Non-disclosure agreement to be entered as per Annexure- II wherever applicable.</p>
36	Inspection and Testing
A	The goods and stores shall be manufactured by approved quality system and each part/component may be inspected and tested by the Buyer prior to shipment and shall comply with relevant requirements. Buyer has the right to inspect at any stage during manufacture/ delivery.
B	<p>Buyer or his authorized representative shall be entitled at all reasonable times during execution to inspect, examine and test at the bidder's premises the material and workmanship of all stores to be supplied under the contract, and if the part of the stores are being manufactured at other premises, the bidder shall obtain for buyer or his authorized representative permission to inspect, examine and test as if the said stores are being manufactured at the bidder's premises. Such inspection, examination and testing, if made shall not release the bidder from any obligation under the contract.</p> <p>For indigenous bidders all costs related to first inspection request shall be borne by the buyer and the cost of subsequent inspections due to non-readiness of material/rework/ rejections shall be borne by the bidder. In case of imports all inspection charges including third party inspections if any shall be borne by the bidder. The cost of inspection staff/third party specified by the Buyer shall be borne by bidder unless otherwise specifically agreed. If the contract provides for tests on the premises of the bidder or any of his sub-contractor/s, bidder shall be responsible to provide such assistance, labor, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently.</p> <p>Cost of any type test or such other special tests shall be borne by the bidder unless otherwise specifically agreed in the contract.</p> <p>The Bidder shall give the authorized representative of the buyer reasonable notice in writing of the date on and the place at which any stores will be ready for inspection/ testing as provided in the Contract. Annexure – I, may strictly be complied with or the time lines. Any delay in submission of the documents by the bidder will not alter the delivery date.</p>
37	Quality and Condition of the Deliverables
	The bidder shall be responsible for compliance with applicable technical, safety, quality, environmental requirements and other regulations in relation to products, packaging and raw and ancillary materials.
38	Packaging and Dispatch
	<p>The bidder shall package the deliverables safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by sea/air/rail/road to its destination suitably protected against loss, damage, corrosion in transit and the effect or tropical salt laden atmosphere. The packages shall be provided with fixtures/hooks and sling marks as may be required for easy and safe handling by mechanical means. Special packaging conditions/ environmental conditions as defined in the NIT shall be fully complied.</p> <p>Each package must be marked with consignee name, address, P.O. number, Package Number, gross weight & net weight, dimensions (Lx B x H) and bidder's name. The packing shall allow for easy removal and checking of goods on receipt and comply with carrier's conditions of packing or established trade practices. Packing list for goods inside each package with P.O. item No. & quantity must also be fixed securely outside the box to indicate the contents. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols/instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.</p>
39	Contract variations; Increase or decrease in the scope of supply
	<p>Buyer may vary the contracted scope during execution due to exigencies of project requirement.</p> <p>If the bidder is of the opinion that the variation has an effect on the agreed price or delivery period, Buyer shall be informed of this immediately in writing along with technical details, and in the event of additional work, submit a quotation with regards to the price and period involved, as well as the effect this additional work will have on the other work to be performed by the bidder. Wherever unit rates are available in the contract, the same shall be applied to such additional work. The bidder shall not perform additional work before buyer has issued written instructions/amendment to the purchase order to that effect.</p> <p>The work which the bidder should have or could have anticipated in terms of delivering the service (s) and functionality (ies) as described in this agreement should be executed by the bidder without any price implication.</p> <p>In case of no change in the scope / technical specifications, bidder shall endeavor to keep the material ready and intimate the same to BHEL within the contractual delivery date, failing which, the delay if any will be attributed to supplier, and any upward price variation thereof for delivery at a later date is not admissible.</p>
40	Rejected/Short shipments/ warranty/guarantee replacements
	In case of any short shipment during initial supply which is subsequently dispatched by the bidder or any guarantee / warranty replacements shall be dispatched on "DDP-Delivered duty paid BHEL stores" basis for imported items and "FOR-BHEL Stores/designated destination" basis for indigenous items.

41	<p>Export Administration Regulations</p> <p>If a delivery includes such technology and / or supply that is subjected to the export regulations the bidder shall obtain due permissions, approvals, license etc.</p>
42	<p>Force Majeure</p> <p>The bidder shall not be considered in default if delay occurs due to causes beyond their control such as Acts of God, Natural calamities, Fire, Frost, Flood, Civil War, civil commotion, riot, Government Restrictions.</p> <p>Only those causes that have duration of more than seven days shall be considered cause of force majeure. Notification to this effect duly certified by local chamber of commerce/statutory authorities with supporting documents shall be given by the bidder to BHEL by registered letter/courier service immediately without loss of time.</p> <p>In the event of delay due to such causes the delivery schedule shall be extended for a length of time equal to the period of Force Majeure or at the option of BHEL the order may be cancelled. Such cancellation would be without any liability whatsoever on the part of BHEL.</p> <p>In the event of such cancellation the bidder shall refund any amount advanced or paid to the bidder by BHEL and deliver back any material issued to him by BHEL and release facilities, if any provided by BHEL.</p>
43	<p>Non-waiver of Defaults</p> <p>If any individual provision of the contract is invalid, the other provisions shall not be affected.</p>
44	<p>Settlement of Disputes</p> <p>Except as otherwise specifically provided in the contract, all disputes concerning questions of the facts arising under the contract, shall be decided by the Buyer, subject to written appeal by the bidder to the buyer, whose decision shall be final. Any disputes of differences shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration</p> <p>The bidder shall continue to perform the contract, pending settlement of disputes(s).</p>
45	<p>Conciliation clause</p> <p>CONCILIATION CLAUSE FOR CONDUCTING CONCILIATION PROCEEDINGS UNDER THE BHEL CONCILIATION SCHEME, 2018: 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 agreement, contract or the Memorandum of Understanding, penalty deduction, time extension), which the Parties are unable to settle mutually, arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.</p> <p>The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in Procedure in http://www.bhel.com/index.php/story_details?story=2454 .</p> <p>The Procedure together with its Formats will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in this ITB</p>
46	<p>ARBITRATION</p> <p>46.1 Except as provided elsewhere in this Contract, in case Parties are unable to reach amicable settlement (whether by Conciliation to be conducted as provided in Clause 45 herein above or otherwise) 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 (hereinafter referred to as the 'Dispute'), then, either Party may, refer the disputes to IAMC (International Arbitration and Mediation Centre, Hyderabad) and such dispute to be adjudicated by Sole Arbitrator appointed in accordance with the IAMC Rules.</p> <p>46.2 A party willing to commence arbitration proceeding shall invoke Arbitration Clause by giving notice to the other party in terms of section 21 of the Arbitration & Conciliation Act, 1996 (hereinafter referred to as the 'Notice') before referring the matter to IAMC. The Notice shall be addressed to the Head of the Unit, BHEL, executing the Contract and shall contain the particulars of all claims to be referred to arbitration with sufficient detail and shall also indicate the monetary amount of such claim including interest, if any.</p> <p>46.3 After expiry of 30 days from the date of receipt of aforesaid notice, the party invoking the Arbitration shall submit that dispute to IAMC and that dispute shall be adjudicated in accordance with their respective Arbitration Rules. The matter shall be adjudicated by a Sole Arbitrator who shall necessarily be a Retd Judge having considerable experience in commercial matters to be appointed/nominated by the respective institution. The cost/expenses pertaining to the said Arbitration shall also be governed in accordance with the Rules of the respective Arbitral Institution. The decision of the party invoking the Arbitration for reference of dispute to a specific Arbitral institution for adjudication of that dispute shall be final and binding on both the parties and shall not be subject to any change thereafter. The institution once selected at the time of invocation of dispute shall remain unchanged.</p> <p>46.4 The fee and expenses shall be borne by the parties as per the Arbitral Institutional rules.</p> <p>46.5 The Arbitration proceedings shall be in English language and the seat and venue of Arbitration shall be Hyderabad.</p> <p>46.6 Subject to the above, the provisions of Arbitration & Conciliation Act 1996 and any amendment thereof shall be applicable. All matters relating to this Contract and arising out of invocation of Arbitration clause are subject to the exclusive jurisdiction of the Court(s) situated at Hyderabad.</p> <p>46.7 Notwithstanding any reference to the Designated Engineer or Conciliation or Arbitration herein, a. the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree. Settlement of Dispute clause cannot be invoked by the Contractor, if the Contract has been mutually closed or 'No Demand Certificate' has been furnished by the Contractor or any Settlement Agreement has been signed between the Employer and the Contractor.</p> <p>46.8 It is agreed that Mechanism of resolution of disputes through arbitration shall be available only in the cases where the</p>

	<p>value of the dispute is less than Rs. 10 Crores.</p> <p>46.9 In case the disputed amount Claim, Counter claim including interest is Rs. 10 crores and above, the parties shall be within their rights to take recourse to remedies other than Arbitration, as may be available to them under the applicable laws after prior intimation to the other party. Subject to the aforesaid conditions, provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment thereof as amended from time to time, shall apply to the arbitration proceedings under this clause.</p> <p>46.10 In case, multiple arbitrations are invoked (whether sub-judice or arbitral award passed) by any party to under this contract, then the cumulative value of claims (including interest claimed or awarded) in all such arbitrations shall be taken in account while arriving at the total claim in dispute for the subject contract for the purpose of clause 46.9. Disputes having cumulative value of less than 10 crores shall be resolved through arbitration and any additional dispute shall be adjudicated by the court of competent jurisdiction.</p> <p>In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs)/ Port Trusts inter se 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 (Administrative Mechanism for Resolution of CPSEs Disputes) as mentioned in DPE OM No. 05/0003/2019-FTS-10937 dated 14-12-2022 as amended from time to time.</p>																	
47	<p>Applicable Laws and jurisdiction of Courts</p> <p>This contract shall be governed by the Law for the time being in force in the Republic of India. Subject to clause 46 of this contract, the Civil Court having original Civil Jurisdiction at Hyderabad, shall alone have exclusive jurisdiction in regard to all matters in respect of the Contract.”</p>																	
48	<p>BHEL-Fraud prevention policy shall be adhered to.</p> <p>The Bidder along with its associate/ Collaborators/ Sub-contractors/ sub-bidders/ 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. List of nodal officers is hosted on BHEL Hyderabad website https://hpep.bhel.com/.</p>																	
49	<p>Suspected Cartel Formation</p> <p>The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case , the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies / guidelines .</p>																	
50	<p>Treatment of cases regarding conflict of interest:</p> <p>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:</p> <ul style="list-style-type: none"> 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 subcontractor 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. <p>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.</p>																	
51	<p>Escalation Matrix</p> <table border="1"> <thead> <tr> <th>Details</th> <th>Name</th> <th>Contact Number</th> </tr> </thead> <tbody> <tr> <td>Authorised representative</td> <td></td> <td></td> </tr> <tr> <td>Technical In-charge</td> <td></td> <td></td> </tr> <tr> <td>Finance and Taxation</td> <td></td> <td></td> </tr> <tr> <td>Escalation for above</td> <td></td> <td></td> </tr> </tbody> </table>			Details	Name	Contact Number	Authorised representative			Technical In-charge			Finance and Taxation			Escalation for above		
Details	Name	Contact Number																
Authorised representative																		
Technical In-charge																		
Finance and Taxation																		
Escalation for above																		



52	Grievance Redressal Mechanism
	<p>To promote transparency and ensure fair treatment of all bidders, a structured Grievance Redressal Mechanism is in place to address any concerns or issues arising during the tendering process or in subsequent business dealings with the company. Suppliers/Contractors are requested to follow the below escalation process for grievance resolution:</p> <ol style="list-style-type: none">1. First Level: Any grievance should initially be addressed to the designated Dealing Officer, whose contact details are provided in the Notice Inviting Tender (NIT)/Contract.2. Second Level: If the issue remains unresolved, it may be escalated by lodging a formal grievance through the SUVIDHA Portal: https://suvidha.bhel.in/suvidha/. Responses will be provided in accordance with the defined escalation matrix.”

Note: Purchase officer has to fill Annexure-I while sending enquiry

(To be executed on Non- Judicial Stamp Paper for an appropriate value.
To be stamped as an agreement)

(For Suppliers on Unit's / Division's PMD)

ANNEXURE-II

Framework Confidentiality Agreement Cum Undertaking

This Agreement made on this the _____ day of (month) _____ 20 ____ (“Effective Date”) by and between M/s. BHARAT HEAVY ELECTRICALS LIMITED, having registered office at “BHEL House”, Siri Fort, New Delhi – 110049 (India), acting through its _____ Unit (hereinafter may be referred to as “BHEL” or “the company”).

And

M/s. _____ (address) _____
represented by authorized representative Sri _____ (herein after referred to as the “Supplier”).

The supplier and the company may, unless the context otherwise requires, hereinafter be collectively referred to as “Parties” or singly as the “Party”.

RECITALS

Whereas, BHEL is engaged in the design, engineering, manufacturing, construction, testing, commissioning and servicing of a wide range of products, systems and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable energy, Oil & Gas and Defence and providing associated services to varied customers in relation to which BHEL / its affiliates own valuable information of a secret and confidential nature.

Whereas the Company may, in connection with contract(s) (as defined hereunder) placed or to be placed upon the supplier, or otherwise, from time to time, make available, Technical Information as is defined hereunder.

And Whereas BHEL is willing to provide such Technical Information to the Supplier from time to time and the Supplier understands and acknowledges that such Technical Information is valuable for the Company and as such is willing to protect confidentiality of such information, subject to the terms and conditions set out hereunder.

Now therefore, in view of the foregoing premises and in consideration of the mutual covenants and agreements hereinafter set forth, the parties agree as under:

1. Definitions:

Unless the context so requires, in this Agreement, the following terms will bear the meaning ascribed to the said term in this clause.

- A. **“Contract”** means the contract entered into with a supplier and includes a Purchase Order, or a Work Order for procurement of any goods or for provision of any services.
- B. **“Effective Date”** means the date of this Agreement as mentioned in the preamble of this Agreement.
- C. **“Supplier”** includes a Contractor or a Vendor of the Company whether for supplying of goods or for providing any services under a Contract or both.
- D. **“Technical Information”** includes Drawings, and / or Product Standards and / or Specifications and / or Corporate / Plant Specifications and / or Technological Process Sheets and / or Technical Data Sheets and / or Jigs & Fixtures and / or Pattern & Dies and / or Special Gauges and / or Tools etc. Belonging to or wherein the Company has acquired from a third party a right of user and includes any improvement thereto from time to time whether carried out by the Company or by the Suppliers.
- E. **“Intended Purpose”** means the purpose for which the Technical Information is provided to the supplier under or in connection with a contract.
- F. **“Improvement”** includes any modification made to, or adaptation of, the Technical Information which enhances or is calculated to enhance the performance (Whether in terms of effectiveness or in terms of efficiency or both) of the product and / or the service to be provided by the Supplier under a Contract.

2. This Agreement shall come into force / deemed to have come into force, as the case may be, on the Effective Date; or, on the first date when the Technical Information or any part thereof is provided by BHEL to the supplier; whichever is earlier.

3. **Agreement deemed to be incorporated in each contract:** Unless and to the extent otherwise stipulated in the Contract, the conditions of this Agreement are deemed to be incorporated in all Contracts which may be entered into between the Company and the Supplier. Further, unless otherwise stipulated, the obligations under this Agreement are and will be independent of the obligations under the Contracts and such obligations of the Supplier hereunder will remain of full effect and validity notwithstanding that the period of validity of the Contract has expired by efflux of time stipulated therein; or, the contract has been discharged by performance or breach; or, the termination of the Contracts for any reason whatsoever.

4. **Ownership:**

4.1 The Company may, from time to time, make available to the Supplier, Technical Information on a non-exclusive basis by way of loan.

4.2 The Supplier acknowledges and agrees that all Technical Information and copies thereof that are or may be provided by the Company to the Supplier, are and shall remain the property of

BHEL or that of the concerned entity from whom BHEL has obtained the Technical Information and such Technical Information are and shall constitute trade secrets of the BHEL. Nothing in this Agreement or in any disclosures made hereunder by or on behalf of the Company shall be construed as granting upon the Supplier any patent, copyright or design or any other intellectual property rights of whatsoever description that subsists or may hereinafter exist in the Technical Information. Furthermore, nothing in this Agreement or in any disclosures made hereunder by or on behalf of the Company shall be construed as granting upon the supplier any license or right of use of such patent, copyright or design or any other intellectual property rights of whatsoever description which may now or hereafter exist in the Technical Information except for use of the Technical Information strictly in accordance with this Agreement and the contract and / or as directed in writing by the Company, solely for the Intended Purpose under the Contract.

4.3 Neither party is obligated by or under this Agreement to purchase from or provide to the other party any service or product and that any such purchase / sale of any product and / or service by one party to the other party will be governed by the Contract if any, that may be entered into by and between the Company and the Supplier.

4.4 The Supplier is / has been made well aware and acknowledges that the Technical Information being / which may be shared with it by the Company has been either generated by the Company by incurring huge investment and cost or obtained from foreign collaborators under Technical Collaboration Agreement (TCA) with stringent confidentiality conditions.

4.5 The supplier agrees and undertakes to adhere to confidentiality requirements as applicable to BHEL under a TCA and also ensure that the confidentiality requirements are adhered to by all its concerned employees or sub-contractors /suppliers (where permitted to be engaged by BHEL). Any damages, losses, expenses of any description whatsoever, arising out of or in connection with a breach of the confidentiality requirements under a TCA owing to any act or omission on the part of the supplier or its employees or sub-contractors / suppliers that is claimed by a foreign collaborator from the Company shall be wholly borne by the Supplier and it shall keep BHEL fully indemnified in this behalf. The demand by the Company shall be conclusive upon the Supplier who shall thereupon forthwith pay to the Company without demur, dispute or delay the amount as demanded without demanding any further proof thereof.

4.6 The Supplier agrees and undertakes that unless so decided and advised by the Company in writing all rights / title to any Improvement to the Technical Information shall vest in the Company. The Supplier undertakes and agrees to inform forthwith to the Company of any such Improvement made to the Technical Information and transfer all drawings / documents or other materials connected with such Improvement to the Company and also agrees to fully cooperate with the Company for protecting the Company's interests in such Improvements

in the Technical Information including but not limited to obtaining necessary protection for the intellectual property rights in such improvement, if so desired by the Company. If a question arises whether a modification amounts to improvement to the Technical Information, the same shall be decided by the Company and such decision shall be final and binding upon the supplier.

5. Use and Non – Disclosure:

5.1 Unless otherwise stipulated by the Company, all Technical Information made available to the supplier, by the Company shall be treated as Confidential irrespective of whether the same is marked or otherwise denoted to be Confidential or not.

5.2 The Supplier undertakes and agrees that the Technical Information in its possession shall be held in strict confidence and will be used strictly in accordance with this Agreement and solely for the Intended Purpose under the Contract. Use of the Technical Information for any other purpose other than Intended Purpose is prohibited.

5.3 In particular, the Supplier shall not use Technical Information or any Improvement in its possession for the manufacture or procurement of the product(s) or components or parts thereof or use the Technical Information or any portion thereof or any modification or adaptation thereof in any form to provide any product and / or service to any third party, without the prior written consent of the Company.

5.4 The Supplier shall not disclose any of such Technical Information to any third party without the prior written consent of the Company. The Supplier agrees that without prior written consent of the Company, the supplier shall not disclose to a third party about the existence of this Agreement, or of the fact that it is / was in possession of or has experience in the use of any Technical Information nor shall the Supplier share in any manner whatsoever, with a third party, the name or details of any Contract(s) awarded by the Company to it or performed by the Supplier or the scope of work thereof or share any document or correspondence by and between the Company and the supplier in or in connection with this Agreement or such Contract(s). Notwithstanding what is stated elsewhere, the overall responsibility of any breach of the confidentiality provisions under this Agreement shall rest with the Supplier.

5.5 This Supplier undertakes and agrees not to make copies or extracts of and not to disclose to other any or all of the Technical Information in its possession, except as follows:

(a) The Supplier may disclose the Technical Information to such of its officers and employees strictly to the extent as is necessary for such officer or employee for the Intended Purpose, provided that the Confidential Information (or copies thereof) disclosed shall be marked

clearly as the confidential and proprietary information of Company and that such officers and employees shall similarly be bound by undertakings of confidence, restricted use and non-disclosure in respect of the Technical Information. The Supplier shall be responsible for any breach of such confidentiality provisions by such officers and employees.

- (b) With the prior written consent of Company, the supplier may disclose for the Intended Purpose such Technical Information as is provided for in such consent to such of its professional advisers: consultants, insurers and subcontractors who shall be similarly bound by undertakings of confidence, restricted use and non-disclosure in respect of such Technical Information.
- (c) The Supplier shall not be prevented to make any disclosure required by (i) order of a court of competent jurisdiction or (ii) any competent regulatory authority or agency where such disclosure is required by law, provided that where the supplier intends to make such disclosure, it shall first consult Company and take all reasonable steps requested by it to minimize the extent of the Technical Information disclosed and to make such disclosure in confidence and also shall cooperate with the Company in seeking any protective order or any other remedy from proper authority in this matter.

6. Exceptions:

The Obligations of the Supplier pursuant to the provisions of this agreement shall not apply to any Confidential Information that:

- a) was / is known to, or in the possession of the Supplier prior to disclosure thereof by the Company;
- b) is or becomes publicly known, otherwise than as a result of a breach of this agreement by the Supplier.
- c) is developed independently of the Disclosing party by the Supplier in circumstances that do not amount to a breach of the provisions of this Agreement or the Contract;
- d) is received from a third party in circumstances that do not result in a breach of the provisions of this Agreement.

- 7. The Obligation of maintaining confidentiality of the Technical Information on each occasion, shall subsist for the entire duration during which the Technical Information / equipment is in possession of the Supplier and shall thereafter subsist for a further period of _____ years from the date when the complete Technical Information has been returned in portions on different dates, the period of ____ years will be reckoned from the date when the last portion of the Technical Information has been returned. Notwithstanding the expiry of the confidentiality obligation, the obligation of the Supplier under clause 5.4 shall continue to subsist for a further period of _____ years.

8. Warranties & Undertakings:

- a) The Supplier undertakes to ensure the due observance of the undertakings of confidence, restricted use and non-disclosure by its persons to whom it discloses or releases copies or extracts of the Technical Information.
- b) The Supplier shall keep the Technical Information or improvement made therein properly segregated and not mix up the same with any other material / documents belonging to him / it or to any other third party.
- c) The Supplier further undertakes that he / it shall not hypothecate or give on lease or otherwise alienate or do away with any of the Technical Information and / or equipment of the Company, made available to him / it, and undertakes that he / it shall hold the same as a trustee, in capacity of custodian thereof and use / utilise the same solely for the purpose of executing the contract awarded by the Company.
- d) The Supplier further undertakes that he / it shall return all the equipment and / or Technical Information as far as practicable in the same condition in which the same was made available to him / it by the Company together with any Improvement thereon and the documents connected with such Improvement, to the Company forthwith upon completion of the scope of work or contract for which such Technical Information was provided by the Company to it or as directed by the Company together with a confirmation by way of an affidavit or in such manner as directed by the Company that it has not retained any equipment and / or Technical Information / improvement thereof. In case any such equipment and / or Technical Information or thereof shall remain in his possession or is not capable of being returned, the retention and use of such Technical Information or improvement thereto shall continue to be governed by this Agreement.
- e) The Supplier undertakes to indemnify the Company for all the direct, indirect and / or consequential losses, damages, expenses whatsoever including any consequential loss of business, profits suffered by the Company owing to breach by the Supplier of its obligations under this Agreement and / or the confidentiality requirements, if any, contained in the Contract and that the Supplier hereby agrees that the decision of the Company in all such or any such matter/s shall be final and binding on the Supplier. On mere written demand of the Company, the Supplier shall forthwith and without demur or delay pay to the Company any such sum as determined by the Company as the amount of loss or damage or expense which has been suffered by the Company. The Supplier agrees that the Company shall be entitled to withhold and appropriate any amount payable to the Supplier under any Contract then existing between the Company and the Supplier, in case the Supplier fails to make payment, in terms of the written demand, within 7 days thereof. Without prejudice to the forgoing actions, in respect to any breach of this Agreement, the Company shall be entitled to take

any other action against the Supplier as per applicable laws, the Contract, Company's applicable policies, guidelines rules, procedures, etc.

9. Without prejudice to any other mode of recovery as may be available to the Company for recovery of the amount determined as due as per Clause 9 (f) hereinabove, the Company shall have a right to withhold, recovery and appropriate the amount due towards such losses, damages, expenses, from any amount due to the Supplier in respect of any other Contract (s) placed on him / it by any department / office / unit/ division of the said Company.

10. Arbitration & Conciliation:

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, penalty deduction, validity or execution of the Contract; time extension, 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 the other Party refer such dispute or difference to the sole arbitration . Sole arbitrator to be appointed by Head of the Unit - BHEL, HPEP.

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 provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause.

The seat of arbitration shall be Sangareddy / Hyderabad, Telangana. The language of arbitration shall be English and the documents shall be submitted in English.

The cost of arbitration shall initially be borne equally by the Parties subject to the final apportionment of the cost of the arbitration in the award of the Arbitrator.

Subject to the arbitration in terms of clause 46 of ITB (clause 27 of ATC GeM), the courts at Sangareddy, Telangana State shall have exclusive jurisdiction over any matter arising out of or in connection with this contract.

Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the Contractor shall proceed with and continue without hindrance the performance of its obligations 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.

ARBITRATION FOR CONTRACT WITH PUBLIC SECTOR ENTERPRISE (PSE) OR A GOVERNMENT DEPARTMENT

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 inter se 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

CONCILIATION CLAUSE FOR CONDUCTING CONCILIATION PROCEEDINGS UNDER THE BHEL CONCILIATION SCHEME, 2018: 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 agreement, contract or the Memorandum of Understanding, penalty deduction, time extension), 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 and as provided in Procedure in http://www.bhel.com/index.php/story_details?story=2454 . The Procedure together with its Formats will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in this ITB

11. Governing Law & Jurisdiction:

This agreement shall be construed and interpreted in accordance with the laws of India and shall have exclusive jurisdiction of Sangareddy/Hyderabad courts, Telangana, India.

SIGNATURE

WITNESSES

1

Name:

Address:

2

Name:

Address:

Annexure - III

Proforma for self-certification by Supplier for minimum local content on their letter head for tender value less than Rs 10 Crore

"We _____ (Name of Manufacturer) undertake that we meet the mandatory minimum Local Content (LC) requirement i.e. _____ (to be filled as notified in the policy) for claiming Purchase Preference linked with Local Contents under the Govt. policy against tender no. _____."

Auditor's certification with respect to minimum local content on the letter head of Statutory Auditor for tender value above Rs.10 crore

"We _____ the statutory auditor of M/s _____ (name of the bidder) hereby certify that M/s _____ (name of manufacturer) meet the mandatory Local Content requirements of the Goods and/or Services i.e. _____ (to be filled as notified in the policy) quoted vide offer No. _____ dated _____ against BHEL's tender No. _____ by M/s _____ (Name of the bidder)."

Annexure - IV

Proforma for self-certification by Supplier for Compliance to Clause No 20 (B)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and I certify that M/s.... (Name of firm) is **not from such a country/is from such a country** (delete whichever is NOT applicable) and has been duly registered with the Competent authority (delete if NOT applicable) . I hereby certify M/s fulfills all requirements in this regard and is eligible to be considered . (where applicable , valid registration by the competent authority shall be attached)

Sd/-

Authorised Signatory with Stamp

(On Company Letter Head)

FORM NO. 10F

[See sub-rule (1) of rule 21AB]

Information to be provided under sub-section (5) of section 90 or sub-section (5) of section 90A of the Income-tax Act, 1961

I..... son/daughter of Mr in the capacity of.....
(Designation) do provide the following information, relevant to the previous year **2021-22** in case of for the purposes of sub-section (5) of section 90/section 90A:-

Sl.No.	Nature of information	Details
(i)	Status (individual; company, firm etc.) of the assessee	Company
(ii)	Permanent Account Number (PAN) of the assessee if allotted	
(iii)	Nationality (in the case of an individual) or Country or specified territory of incorporation or registration (in the case of others)
(iv)	Assessee's tax identification number in the country or specified territory of residence and if there is no such number, then, a unique number on the basis of which the person is identified by the Government of the country or the specified territory of which the assessee claims to be a resident

(v)	Period for which the residential status as mentioned in the certificate referred to in sub-section (4) of section 90 or sub-section (4) of section 90A is applicable	<u>2022-23</u>
(vi)	Address of the assessee in the country or territory outside India during the period for which the certificate, mentioned in (v) above, is applicable

I have obtained a certificate to in sub-section (4) of section 90 of sub-section (4) of section 90A from the Government of..... (name of country or specified territory outside India)

Signature:.....

Name:.....

Address:.....

Email ID:.....

Contact Number.....

Permanent Account Number:.....

Verification

I..... do hereby declare that to the best of my knowledge and belief what is stated above is correct complete and is truly stated. Verified today the..... day of.....

In case the M/s Bharat Heavy Electricals Limited, HPEP, Ramachandrapuram, Hyderabad is declared as an assessee in default due to any misstatement or incorrect declaration, we indemnify M/s Bharat Heavy Electricals Limited from any ensuing consequences thereunder.

Signature of the person providing the information

Place:.....

(On Company Letter Head)

No Business Connection or Permanent Establishment Certificate

Date

To

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
India - 502032

Sir,

Sub: No Business Connection or Permanent Establishment declaration for FY **2021-22**

This is to certify that (Name of the supplier) is a company incorporated in(country) and does not have any business connection in India as per the provision of Section 9 of the Income Tax Act 1961 or any Permanent Establishment as defined in Article 5 of the India and(country) DTAA.

We hereby certify that we will notify BHEL in case of any change in the status as certified above.

For

Authorised Signatory

(Note – Please refer definition of the Business Connection on reverse and Permanent Establishment in the relevant DTAA)

"Business connection" as defined in Section 9 of the Income Tax Act shall include any business activity carried out through a person who, acting on behalf of the non-resident,—

- (a) has and habitually exercises in India, an authority to conclude contracts on behalf of the non-resident or habitually concludes contracts or habitually plays the principal role leading to conclusion of contracts by that non-resident and the contracts are—
 - (i) in the name of the non-resident; or
 - (ii) for the transfer of the ownership of, or for the granting of the right to use, property owned by that non-resident or that non-resident has the right to use; or
 - (iii) for the provision of services by the non-resident; or
- (b) has no such authority, but habitually maintains in India a stock of goods or merchandise from which he regularly delivers goods or merchandise on behalf of the non-resident; or
- (c) habitually secures orders in India, mainly or wholly for the non-resident or for that non-resident and other non-residents controlling, controlled by, or subject to the same common control, as that non-resident:

Provided that such business connection shall not include any business activity carried out through a broker, general commission agent or any other agent having an independent status, if such broker, general commission agent or any other agent having an independent status is acting in the ordinary course of his business :

Provided further that where such broker, general commission agent or any other agent works mainly or wholly on behalf of a non-resident (hereafter in this proviso referred to as the principal non-resident) or on behalf of such non-resident and other non-residents which are controlled by the principal non-resident or have a controlling interest in the principal non-resident or are subject to the same common control as the principal non-resident, he shall not be deemed to be a broker, general commission agent or an agent of an independent status

For the removal of doubts, it is hereby clarified with explanation-2A, that the significant economic presence of a non-resident in India shall constitute "business connection" in India and "significant economic presence" for this purpose, shall mean—

- (a) transaction in respect of any goods, services or property carried out by a non-resident in India including provision of download of data or software in India, if the aggregate of payments arising from such transaction or transactions during the previous year exceeds such amount as may be prescribed; or
- (b) systematic and continuous soliciting of business activities or engaging in interaction with such number of users as may be prescribed, in India through digital means:

Provided that the transactions or activities shall constitute significant economic presence in India, whether or not,—

- (i) the agreement for such transactions or activities is entered in India; or
- (ii) the non-resident has a residence or place of business in India; or
- (iii) the non-resident renders services in India:

Thresholds for the purposes of significant economic presence.

11UD. (1) For the purposes of clause (a) of Explanation 2A to clause (i) of sub-section (1) of section 9, the amount of aggregate of payments arising from transaction or transactions in respect of any goods, services or property carried out by a non-resident with any person in India, including provision of download of data or software in India during the previous year, shall be two crore rupees;

(2) For the purposes of clause (b) of Explanation 2A to clause (i) of sub-section (1) of section 9, the number of users with whom systematic and continuous business activities are solicited or who are engaged in interaction shall be three lakhs.

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 _____

_____ (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.

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- 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 Indian Penal Code (IPC) 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 Suspension 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.

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- 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 per the terms & conditions of the Contract.

 For & On behalf of the Principal
 (Office Seal)

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

Place _____

Date _____

Witness: _____
 (Name & Address) _____

Witness: _____
 (Name & Address) _____

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Srs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at _____ hereinafter referred to as the 'Vendor / Contractor / Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated valued at Rs..... (Rupees -----)/FC.....(in words.....) for (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs ----- (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We thebank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance Hyderabad ee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

WeBANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including..... and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before thewe shall be discharged from all liabilities under this guarantee thereafter.

This Bank Guarantee shall be governed, construed and interpreted in accordance with the laws of India.

Courts at Hyderabad shall alone have exclusive jurisdiction over any matter arising out of or in connection with this Bank Guarantee

We, BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....
- b) This Guarantee shall be valid up to
- c) Unless the Bank is served a written claim or demand on or before _____ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ *NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited*

² *NAME AND ADDRESS OF THE VENDOR/ CONTRACTOR/ SUPPLIER*

³ *DETAILS ABOUT THE NOTICE OF AWARD/ CONTRACT REFERENCE*

⁴ *CONTRACT VALUE*

⁵ *PROJECT/ SUPPLY DETAILS*

⁶ *BG AMOUNT IN FIGURES AND WORDS*

⁷ *VALIDITY DATE*

⁸ *DATE OF EXPIRY OF CLAIM PERIOD*

Notes:

1. It is advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Contractor/sub-contractor /vendor/ Bank issuing the guarantee.
3. **In Case of Bank Guarantees submitted by Foreign Vendors-**

a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)

can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.

b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)

b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.

b.2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.

b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

S.L No	<u>Special Conditions of Contract (SCC)</u>	Supplier's Remarks/Acceptance
1	List of the Items for entering into the Rate Contract doe One Year are enclosed in the Annexure I	
2	Items shall be supplied as per BHEL Technical Specifications and Standard Quality Plan only. Vendor to confirm in technical offer.	
3	Freight & Insurance: Bidders shall always quote their price inclusive of Freight & Insurance charges upto FOR BHEL R C Puram.	
4	Bidder shall submit filled PQC along with relevant enclosures, BHEL Technical specifications, ITB Rev 18 along with relevant enclosures and SCC duly filled and signed and stamped, as an agreement to all the tender conditions.	
5	Supply Tolerance: +/- 10% Supply Tolerance is allowed for each item. Offers insisting MOQ are liable for rejection.	
6	<p>Delivery Period: Material shall be dispatched within 16 Weeks from the date of PO. Vendors shall submit the detailed timelines for the total activities including BHEL third party inspection, after PO is released.</p> <p>POs shall be released as and when required, against this RC.</p> <p>Loading Factor for deviation to the Delivery Period: Offers with delivery period beyond 16 weeks shall be loaded @ 0.5% per week. Maximum acceptable delivery period is 20 weeks from the date of PO and Offers with delivery period beyond 20 weeks shall be rejected.</p>	
7	Third Party Inspection: Third Party Inspection shall be carried out by BHEL appointed representative/Agency at Supplier's works for every Purchase Order released through RC. Supplier shall upload the BHEL standard Quality Plan in our CQIR portal (Third Party Inspection portal). CQIR portal weblink is cqir.bhel.in	
8	<p>Original Material Test Certificates, Inspection Reports & CQIR: Original documents of the CQIR, MTCs & Inspection reports duly signed & stamped by the Supplier & BHEL Third Party Inspector shall be couriered to the following address immediately after dispatch of the Material. Payment credit period is linked to the date of receipt of complete documentation at BHEL end. Scanned documents of the same shall be sent to the BHEL on the same day of dispatch of the Material.</p> <p>Address: Venkatesh M Manager/Purchase CMM, Admin Building Fourth Floor BHEL, R C Puram, Hyderabad 502032 040 2318 4259, venkateshm@bhel.in</p>	
9	<p>Material delivery is to be done at following Address:</p> <p>Store 11 Bharat Heavy Electricals Limited (BHEL) Ramachandrapuram, Hyderabad, Telangana 502032.</p>	
10	<p>Progress Report: Once the PO is released, Supplier shall submit the progress report mentioning the progress of the Manufacturing/Testing/Inspection for every 15 days.</p> <p>BHEL reserves right to cancel the PO without any prior notice, in case of any breach of contract. Any violation to the agreed tender terms will be treated as breach of contract</p>	
11	Validity of Rate Contract: This Rate Contract is valid for a period of One Year from the date of entering into RC. This period may be extended upto 6 months after One Year with mutual consent. Prices shall be kept firm throughout the RC period and no price variation during RC shall be allowed.	

	<p>However, statutory levies and duties shall be applicable as per Government notifications time to time.</p> <p>Quantity increase, if any, shall be permitted on pro-rata basis for the extended period with the same rates as per rate contract.</p> <p>If during the tenure of the contract any technical problems are noticed or otherwise there is delay in supplies ,BHEL reserves the right to put on "HOLD" on further supplies and take supplies from the other supplier under risk purchase clause (In case of default, purchaser (BHEL) reserves the right to make alternative arrangement of procuring material at supplier's risk and cost).</p>	
12	<p>Termination of Rate Contract: BHEL reserves right to terminate the Rate Contract at any time or stage during the contract period by giving 15 days notice for the reasons beyond the control (e.g. Customer requirement, abnormal downward price trend etc), without any financial consideration/implication.</p>	
13	<p>Tender Evaluation: Group wise L1 basis as per Annexure I (List of Items). If any Item of the each group is not quoted or not qualified, Vendor's Offer will be disqualified for that particular group.</p> <p>Contract will be awarded Group wise and the determination of L1 will be done separately for each Group.</p>	
14	<p>MII & MSE Purchase Preference: Yes as per ITB</p>	
15	<p>Reverse Auction: BHEL shall be resorting to Reverse Auction (RA) for this Tender (Guidelines as available on www.bhel.com) RA shall be conducted amongst the qualified Vendors. Price bids of the qualified Vendors will be opened and same shall be considered for RA. In case any Bidder(s) do(es) not participate in the online Reverse Auction, their sealed envelop price bid along with applicable loading, if any shall be considered for ranking.</p>	
16	<p>Integrity Pact: Bidders shall sign the Integrity Pact as per format given along with the ITB.</p>	
17	<p>TCMOU (Techno-Commercial MOU): In addition to one year Rate Contract, TCMOU is also been envisaged as per the below details.</p> <p>Qualified Bidders shall sign TCMOU for the Enquiry Items, with BHEL for a period of 2 years, that can be extended with mutual consent. Frozen TCMOU shall be used for future enquiries and only price bids will be sought from the TCMOU Vendors.</p>	
18	<p>BHEL team may carry-out the vendor evaluation or assessment in case vendor do not have past experience of supplying to BHEL. Vendor shall present all their inhouse facilities as per clause 3 above, also BHEL shall have free access to all areas where the manufacture of rounds is carried out. Vendor or Manufacturer to confirm</p>	
19	<p>For traders, their manufacturers assessment may be carried out by BHEL. Also trader shall be responsible to arrange assessment at their manufacturer works and BHEL shall have free access to all areas at manufacturer works where the manufacture of rounds is carried out/systems that are followed at trader works office will also be subjected to assessment by BHEL team. Trader and their Manufacturer to confirm</p>	
20	<p>Measuring Unit: Bidders shall note that, NIT quantities are mentioned in KGs and not in Metric Tones (MT); While submitting price in the Offer, Bidders shall be cautious and shall enter Per KG Price only</p>	

Guidelines for Reverse Auction –2024

Doc. No. AA:SSP:RA:00

Dated: 05.12.2024

Business Rules for Reverse Auction

Annexure – I

This has reference to tender no **{tender number....date...}**. BHEL shall finalise the Rates for the supply of *{item name}* through Reverse Auction mode. BHEL has made arrangement with M/s. *{Service provider}*, who shall be BHEL's authorized service provider for the same. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enq. No. {...} dated {...}, (b) Bidders' technical & commercial bid (in case of two part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning

- i. Price bids of all techno-commercially qualified bidders shall be opened.
- ii. **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii. The lowest bidder in sealed price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv. Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v. After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi. Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

2. Schedule for reverse auction: The Reverse Auction is tentatively scheduled on *{date}*: *:{start time}*: *:{Close Time}*: *}*.

3. Auction extension time: If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes,

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for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

4. **Bid price:** The Bidder has to quote the {...} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document, including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).
5. **Bidding currency and unit of measurement:** Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications {...}

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for {... days} from the date of reverse auction. These shall not be subjected to any change whatsoever.

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7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
 8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
 9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
 10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction. Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
 11. Reverse auction shall be conducted by BHEL (through M/s {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {Service provider} is responsible for such eventualities.

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- 12.** Proxy bids: Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

- 13.** Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc from M/s {Service provider}.
- 14.** M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the
-

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Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.

15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. {...} dt. {...}. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with

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intimation to bidders.

21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {*Service provider*}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com), shall be initiated by BHEL.

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Mandate to Service Provider

Annexure – II

Ref :

Date :

To,

M/s. {Service provider}

Sub: Providing of Services for Reverse Auction.

Ref: No {...} date {...}

Dear Sir,

Please conduct Reverse Auction as per the following details:

- **Scope:** Auction event management with training of BHEL and its bidders.
- Seek process compliance form from all the bidders provided by BHEL before start of RA event. In case of postponement of event to some other date, ensure acknowledgement from each bidder.
- Price: Rs. {.....}/- . No other duties, Taxes, levies etc. except service tax @ {.....}% shall be payable for conducting reverse auction. This price is firm.
- Payment Terms: 100% payment after successful completion of Auction.
- Completion of Auction Process: The auction process shall be deemed to have been successfully completed on receipt and acceptance of final report including hard copy/ email of the final bid with price break up, duly signed by the successful bidder who has participated in the reverse auction. The bill shall be submitted along with the completion report to the undersigned.
- Business Rules of the Reverse Auction are as per Annexure – I.
- The list of bidders with their contact details is given in Annexure – IV. and the details of the item (s) to be Reverse Auctioned are as per Annexure – V.
- Please acknowledge receipt of this letter order and also confirm that final report (duly signed and stamped by M/s. {Service provider}) including hard copy/ email of the final bid with breakup of prices duly signed by the successful bidder (duly endorsed by M/s. {Service provider}) shall be submitted within **four** working days of conclusion of auction.

Yours sincerely,

(for and on behalf of BHEL)

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Mandate to Service Provider

Annexure – II

Note:

If the event has been conducted as per mandate, you shall be paid irrespective of RA outcome.

Buyer Name	<ul style="list-style-type: none">- Name of BHEL Unit- Full postal address- Fax:- Phone:- Email:- Contact person name:- Phone:-
Auction to be conducted by	<ul style="list-style-type: none">- Name of Service provider- Full postal address- Fax:- Phone:- Email:- Contact person name:- Phone:-
Date of Auction	<ul style="list-style-type: none">- Date of Auction- Reverse auction time:- Auction website:
Documents Attached: (To be sent to the bidders)	<ol style="list-style-type: none">1) Business rules for Reverse Auction (<u>Annexure-I</u>)2) Process Compliance Form (<u>Annexure-III</u>)3) Details of item (s) to be Reverse Auctioned (<u>Annexure-V</u>)4) Post RA Price confirmation by bidder (<u>Annexure-VI</u>)

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Process Compliance Form

Annexure – III

(The bidders are required to print this on their company's letterhead and sign, stamp before RA)

To

- M/s. {Service provider}
- Postal address}

Sub: Agreement to the Process related Terms and Conditions

Dear Sir,

This has reference to the Terms & Conditions for the Reverse Auction mentioned in the RFQ document for {Items} against BHEL enquiry/ RFQ no.{.....} dt. {.....} This letter is to confirm that:

- 1) The undersigned is authorized official/ representative of the company to participate in RA and to sign the related documents.
- 2) We have studied the Reverse Auction guidelines (as available on www.bhel.com), and the Business rules governing the Reverse Auction as mentioned in your letter and confirm our agreement to them.
- 3) We also confirm that we have taken the training on the auction tool and have understood the functionality of the same thoroughly.
- 4) We also confirm that, in case we become L1 bidder, we will FAX/ email the price confirmation & break up of our quoted price as per Annexure - VI within **two** working days (of BHEL) after completion of RA event, besides sending the same by registered post/ courier both to M/s. BHEL and M/s. {Service provider.}

We, hereby confirm that we will honor the Bids placed by us during the auction process.

With regards

Signature with company seal

Name –

Company / Organization

Designation within Company / Organization

Address of Company / Organization

- **Sign this document and FAX/ email it to M/s {Service provider} at {.....} prior to start of the Event.**

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List of bidders and their address/ contact person details

Annexure – IV

Sl. No.	Address	Contact Person
1	<ul style="list-style-type: none">- Name of bidder- Full postal address- Fax:- Phone:- Email:	<ul style="list-style-type: none">- Contact person name:- Phone:- Email:
2		
3		
..		
..		

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Details of item (s) for Reverse Auction

Annexure – V

1. *{Details of items including quantity, specification, Enquiry no. & date*

1.

2.

..

..

..

}

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RA price confirmation and breakup
(To be submitted by L1 bidder after completion of RA)

Annexure – VI

To

- M/s. Service provider
- Postal address

CC: M/s BHEL
{Unit-
Address-}

Sub: **Final price quoted during Reverse Auction and price breakup**

Dear Sir,

We confirm that we have quoted.

**Rs.{___ in value & in words___} for item(s) covered under tender enquiry
No. {...} dt.{...}**

Total price of the items covered under above cited enquiries is inclusive of {Packing & forwarding, GST, E.D., C.S.T., freight and insurance charges up to {.....} District,{.....} State and Type Test Charges etc., (exclusive of service tax), other as per NIT}

as our final landed prices as quoted during the Reverse Auction conducted today {date} which will be valid for a period of {___ in nos. & in words ___} days.

The price break-up is as given below.

Total

=====
- Rs. **in value & in words**
=====

Yours sincerely,

For _____

Name:

Company:

Date:

Seal:

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 _____

_____ (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 Bharatiya Nyaya Sanhita (BNS) 2023 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.

Mr. Venkatesh

- 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

M. Venkatesh

- 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.

H. V. Venkatesh

- 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 Bharatiya Nyaya Sanhita (BNS)/ 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

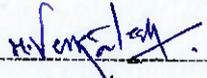
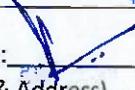
- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, 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.

H. Venkatesh

- 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.


 For & On behalf of the Principal
 (Office Seal)  **VENKATESH M**
 प्रबंधक / क्रय सी एम एम
 Manager / Purchase CMM
 Place BHEL, RC Purus.
 Date बी.एच.ई.एल.-एचकेडपी, हेक्टरद 32, BHEL-HPFP HYD 32
 Witness: 
 (Name & Address) बी.एच.ई.एल.-एचकेडपी, हेक्टरद 32, BHEL-HPFP HYD 32
 Sr. Dy. General Manager / Purchase - CMM
 बी.एच.ई.एल.-एचकेडपी, हेक्टरद 32, BHEL-HPFP, HYD-32

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

Witness: _____
 (Name & Address) _____

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.

SI	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: M. Venkatesh
 Deptt: Purchase - CRM
 Address: Admin Building, BHEL, RC Puram
 Phone: (Landline/ Mobile)
040 2318 4259 / 9705557151
 Email: venkateshm@bhel.in
 Fax: _____

(2)
 Name: T. Venkateswara Rao
 Deptt: Purchase CRM
 Address: Admin Building, BHEL, RC Puram, Hyd
 Phone: (Landline/ Mobile)
040 2318 2379 / 9490311444
 Email: raotv@bhel.in
 Fax: _____