Ref. No.: X/6600/2025/0457/R/1_COR_2

Dated: 05.01.2026

TENDER CORRIGENDUM

Refer Limited Tender Enquiry No.: X/6600/2025/0457/R/1 (NIT Tender ID: 2025_BHEL_56183_1).

Corrigendum Details:

-Due date of tender enquiry is extended to 12.01.2026.

-The PQR and TDC of the tender have been revised and are attached in the corrigendum.

Pre-Qualifying Requirement (PQR)

20250457

	HP INNER CASING (Drg. no. - 01050230500 & Groove Plan Drg. No. - 91010730552 (Complete Finish Machining -after Groove Stelliting)	Indent No.: TTX/PQR/2025/147
SL. No.	**REQUIREMENT**	**REMARKS**
1	Only those vendors should quote who have following machine, facilities installed & operational at their works for following operations for machining, fitting works of "HP Inner Casing" as per Drg. No. 01050230500 and applicable Groove Plan machining Drg No. 91010730552. Raw material casting (Drg. No. 01050256903) shall be supplied to vendor after rough machining work as per TDC for Finish Vertical Borer & Horizontal Borer work . Vendor to provide point wise acceptance of TDC terms with their offer.	Vendor to confirm & provide point wise acceptance of TDC each terms.
2	Vendor must have suitable toolings / facility such as Marking Table / Machine Bed etc. in good working condition, to facilitate marking /Colour matching operation / transfer marking (as required) of job . Vendor must have suitable facility for lifting / handling the subject job.	Vendor to confirm.
3	**Turning / Vertical Boring Operation :-**	
3.1	CNC Vertical Boring Machine, suitable for Vertical Boring of HP Inner Casing as per drawing & T.R.'s requirement. Machine Requirement : (a) Table diameter of machine = 2500 mm or more. (b) Maximum Turning Height of job = 3500 mm or more. (c) Ram Stroke =2800 mm or more. (d) Weight capacity of machine = 40 Tons or more.	(a) Vendor to confirm. (b) Vendor to provide machine details / specification for referred operation.
4	**Horizontal Boring work :-**	
4.1	Vendor must have suitable CNC Horizontal Boring machine with suitable attachments for machining of different details, holes, Threaded holes, Slots etc. as per Drg. and TDC.	(a) Vendor to confirm. (b) Vendor to provide machine accuracies & Geometrical details / specification for referred operation.
5	**Fitting work :-**	
5.1	Vendor must have suitable facility / arrangement for different fitting / assembly works to be done as per drawing & TR.	Vendor to confirm.
6	Vendor to confirm that above machines (as per pt. no. 3 & 4) are available at their works & are in good working condition with capability of achieving accuracies, surface finish & tolerances as per drawing requirements. If necessary, Vendor can suggest alternate machines (other than specified in pt. no. 3 & 4) for machining job with accuracies, surface finish & tolerances as per drawing, for review & acceptance by BHEL.	Vendor to confirm & submit the machine accuracies & Geometry details along with specification.
7	Vendor to confirm that all the dimensions, accuracies & surface finish of the component shall be met as per Technical Requirements & drawing.	Vendor to confirm.
8	Vendor to note that all tools, measuring equipments, technological items etc. required for manufacturing of subject item shall be arranged by vendor, in case of order.	Vendor to confirm.
9	BHEL reserves the right to verify the information provided by vendor. BHEL may also visit vendor works if so desired by BHEL. In case, the information provided by vendor is found to be false/ incorrect, their offer shall be rejected.	Vendor to note & Confirm.

(I K Ranjan)
Mgr. (TTX)

(R P Singh)
Sr. Mgr. (NCT)

Scope of Work

H.P. Inner Casing of Steam Turbine in finish machined condition with Blade grooves, is proposed to be outsourced for Complete finish machining (after groove stelliting) as per machining details & technical requirements furnished in drg.no. 01050230500 & 91010730552.

Casing raw material is Alloy steel casting in two halves (Tensile Strength: 630-750 Mpa).

A) Casing will be sent to vendor from BHEL Haridwar after completing following work :

- Joint Plane of casing halves will be in rough machined with 2mm finishing allowance.
- Refer details Z (Sheet- 1), Dia. 973+0.090 shall be rough machined to Dia. 965.
- Groove machining for stellite deposite, Groove Stelliting & Stress Relieving of Stellited groove will be done. Refer "1. ROUGH GROOVE", "2. STELLITE" at sheet -3 - H.P.I.C. Drg.
- 4 Holes dia. 65 machining as per Section XC-XC (sheet-2).
- Reference belts on I.D & O.D of casing halves on both ends shall be machined for reference for further machining.

B) Scope of Work for vendor:

1. Scope of work for Vendor includes **Complete finish machining of casing as per HP Inner Casing & Groove Plan Casing drawing. Hydraulic Testing of casing Test Chamber 1 & 2** is to be done by vendor as per sheet – 4 of Drg. No. 01050230500.

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TUM-PLG	Manoj Kr Gupta, Sr. Mgr.	

Following points to be considered during machining process.

Reference (Section/View)	Dimension (in mm) as per Drawing	Dimension (in mm) to be Made
View AA (Zone-G-11, Sheet-1, Drg. No. 01050230500)	Dia. 1590h6	Machine Dia. 1600±0.5 **(Finish machining to be done by BHEL)**
View Y (Zone-I-14, Sheet-1, Drg. No. 01050230500)	Groove width 30H11 & depth 9-0.1	Do not machine the groove **(Groove machining to be done by BHEL)**
	Flange Width 250±0.2	Leave a 2mm allowance on both faces. Flange width to be machined to 254±0.2.
	1770+0.1	Dimension 1772+0.1 to be machined. **(Finish machining to be done by BHEL)**
View SS (Zone-B-15, Sheet-1, Drg. No. 01050230500)	Dia. 1599, width 30	Do not machine Dia. 1599. **(Machining to be done by BHEL)**
	I-ring groove diameter 1540 & 1485, depth 49mm	After Stellite welding, only rough machining & DP testing to be done as per detail -3(contour for surface crack test). **(Finish Machining to be done by BHEL)**
View Z (Sheet- 1);	Groove width 21-0.5mm at distance 299+/-0.2 from right face.	This groove is only to be machined after Hydraulic testing of casing (as per Sheet-4 instructions).
Section LL (Sheet -2)	16 no. holes Dia. 40mm.	16 no. holes Dia. 40mm are only to be machined after Hydraulic

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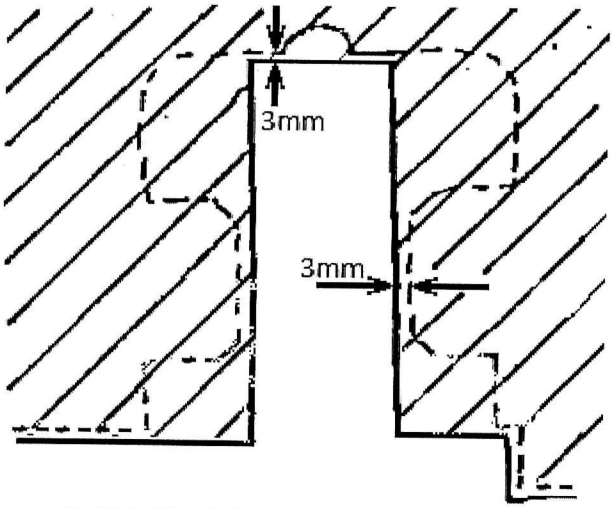
b. **Vertical Boring:** Rough vertical boring and machining of assembled casing as per drg. All details shall be machined with 3mm finishing allowance on all axial dimensions and redial dimensions. Blade Groove Neck width rough machining with 3mm allowance on tool part.



T- GROOVE ROUGH MACHINING

3. **Dismantling of casing halves.**

5.1 Machining of holes :

- Holes ⌀ 40 (2 Nos. +2 Nos.) & details for hydraulic testing as per following details at distance 30.5±0.5 (Section CC & view RA). Details as per sec. I1-I1, II, AA.
- Machine detail with M210 x 6 and Face to 730+2 to C.C, I.D 290 with R10 (SH-4).
- Holes ⌀ 48 (2 Nos. + 2 Nos.) and detail as per Sec RA.

4. Hydraulic testing of the casing halves shall be done as per pressure test requirements in the Drg. (Sheet No-4)
5. **Horizontal Boring:** Finish machining of joint plane of upper& lower half.
6. **Colour Matching:** Colour matching of joint plane of upper & lower half as per

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		testing of casing (as per Sheet-4 instructions).
Refer Zone E-8 in Groove Plan casing drawing no. 91010730552.		Refer Groove Plan casing drawing, zone E-8. Step dia. 810+0.3 with width 23; groove with width 8H7 at dia. 835+0.3 & face at distance 2765 along with taper 15° are to be finish machined during finish machining by vendor. Rough machining of these details at intermediate stage is not to be done.
Section VV (Zone-I-14, Sheet-1, Drg. No. 01050230500) Flange Width	Dia. 1230	Machine as Dia. 1232mm. Chamfer 2x45° is not to be machined.
	Chamfer 2x45°	Chamfer 2x45° is not to be machined.

2. Sequential operations for Machining Operation:

1. **Horizontal Boring:**
   a) Rough machining of joint plane of upper half of the casing with 0.5 mm finishing allowance & joint plane holes machining.
   b) Rough machining of joint plane of lower half with 0.5 mm finishing allowance of the casing.
   c) Transfer marking of joint plane holes from upper half to lower half.
   d) Drill & tapping of joint plane holes in lower half.
2. **Assembly of upper & lower half of the casing.**
   a. Drilling & Reaming of taper pin holes in assembled condition of the casing. Fit taper pins into the holes.

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technical requirement note-1 of the Drg. No. 01050230600.

7. Assembly of upper & lower half of the casing.
8. Re-reaming of taper pin holes & fit taper pin into the holes.
9. **Vertical Boring:** Finish vertical boring of assembled casing as per drg. & TDC requirements.
10. **Horizontal Boring**: Drilling & reaming of cylindrical pin holes in assembled condition of the casing.
11. Dismantling of casing halves.
12. **Horizontal Boring**:
    a. Upper Half: details machining as per drg.
    b. Lower Half: details machining as per drg.

C) Important points: Vendor to note following important points:

- In Groove Plan drawing, all the axial dimensions in specified tolerances are to be maintained from reference plane.
- All other requirements of QP, Standards and technical requirements specified on the drawings to followed.
- No flaws like blow holes, shrinkage, inclusions etc. should open up during machining. However, if any flaw opens up during machining, vendor shall immediately intimate detail and location of flaw and corrective action proposed. Further machining will be suspended till BHEL approves corrective action.
- BHEL shall furnish clarifications, if any, w.r.to scope of work or drg. dimensions / technical requirements to the vendor to enable it to submit technical / commercial offer.
- Party must ensure that all requirements indicated in the drg. regarding:
  - Surface finishes (Ra value indicated in microns).
  - Sizes and tolerances.

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- Geometrical accuracies e.g. run-outs, concentricity, parallelity, perpendicularity etc. shall be fully met.

Reference surfaces are clearly marked in the concerned drawings.

D) After finish machining, inspection report is to be submitted to BHEL for final clearance.

E) Inspection of the job at supplier's works shall be carried out as per BHEL approved quality plan by BHEL/ agency authorized by BHEL for which adequate prior notice (min. 4weeks) shall be given by the supplier.

C) Packing & Preservation:

- Conserve components as per BHEL's conservation instructions (Table-1 of ST 33004) suitable for 6 months. ***PAINT IS NOT ALLOWED*** on any surface. If as per ST33004 the outer unmachined surface of any component is specified to be painted, this requirement should be disregarded. Instead, the unmachined surface should be conserved in the same manner as the machined surface, following the conservation requirements outlined in ST33004.
- Cover joint plane flanges with plywood + rubber sandwiching (e.g., 10 mm rubber + 20 mm plywood) using suitable bracket and other critical machined surfaces with plastic/rubberized caps/wooden protectors to prevent mechanical damage.
- Wrap large components with a minimum 90 GSM polythene sheet, and enclose them with industrial-grade shrink wrap.
- Place components on strong suitable wooden skids or metal base frames with sufficient load-bearing capacity.
- Ensure that all lifting lugs and bollards are clearly marked and easily accessible, as lifting and handling of the component together with its skid shall be carried out using the bollards provided on the component.
- Use shock-absorbing materials (e.g., rubber pads) between the component and the skid/base to avoid impact damage during transport.
- Lock components with appropriate metallic strap/ slings or belts with skid after wrapping and placement on skids/base frames.

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- Ensure packaging is durable enough to withstand the weight of the components and Packing of the finish machined component should be suitable to protect damage to machined surfaces during handling and transportation.

F) All cross-referred documents given in Annexure-I.

ANNEXURE-I

List of drawings / standards to be referred

1. HP Inner Casing (Finish machined drawing).....01050230500
2. Groove Plan Casing 91010730552
3. Blade groove.....31010730513
4. Blade groove.....31010730014
5. Blade groove.....31010730013
6. Blade groove.....31010705512
7. Blade groove.....31010730012
8. Log Sheet.....01050230500LS
9. Log Sheet.....91010730552LS
10. Packing and Preservation.....ST 33004

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