

**Pre-Qualifying Requirement (PQR)**

| <b>HP INNER CASING (Drg. no. - 01050230600 &amp; Groove Plan-91010732552 )<br/>Rough Vertical Boring &amp; Horizontal Boring Machining</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Indent No. 20250424 &amp;<br/>20250425<br/>TTX/PQR/2025/138</b>                                                               |
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| <b>SL. No.</b>                                                                                                                             | <b>REQUIREMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>REMARKS</b>                                                                                                                   |
| <b>1</b>                                                                                                                                   | 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. 01050230600 and applicable Groove Plan machining Drg No. 91010732552.<br><br>Raw material casting (Drg. No. 01050256903) shall be supplied to vendor for rough machining work after control marking. Vendor to carry out machining as per Technical Delivery Condition (TDC) and Drg. provided . Vendor to provide point wise acceptance of TDC terms with their offer. | Vendor to confirm & provide point wise acceptance of TDC each terms.                                                             |
| <b>2</b>                                                                                                                                   | Vendor must have suitable toolings / facility such as Marking Table / Machine Bed etc. in good working condition, to facilitate marking / transfer marking of job (as required). Vendor must have suitable facility for lifting / handling the subject job.                                                                                                                                                                                                                                                                                                                      | Vendor to confirm.                                                                                                               |
| <b>3</b>                                                                                                                                   | <b><u>Turning / Vertical Boring Operation :-</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | (a) Vendor to confirm.<br>(b) Vendor to provide machine details / specification for referred operation.                          |
| <b>3.1</b>                                                                                                                                 | CNC Vertical Boring Machine, suitable for Vertical Boring of HP Inner Casing as per drawing & T.R.'s requirement.<br>Machine Requirement :<br>(a) Table diameter of machine = 2500 mm or more.<br>(b) Maximum Turning Height of job = 3500 mm or more.<br>(c) Ram Stroke =2800 mm or more.<br>(d) Weight capacity of machine = 40 Tons or more.                                                                                                                                                                                                                                  |                                                                                                                                  |
| <b>4</b>                                                                                                                                   | <b><u>Horizontal Boring work :-</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | (a) Vendor to confirm.<br>(b) Vendor to provide machine accuracies & Geometrical details / specification for referred operation. |
| <b>4.1</b>                                                                                                                                 | Vendor must have suitable CNC Horizontal Boring machine with suitable attachments for machining of Joint Plans, holes, Threaded holes, Slots as per Drg. and TDC.                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                  |
| <b>5</b>                                                                                                                                   | <b><u>Fitting work :-</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                  |
| <b>5.1</b>                                                                                                                                 | Vendor must have suitable facility / arrangement for different fitting / assembly works to be done as per drawing & TR.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Vendor to confirm.                                                                                                               |
| <b>6</b>                                                                                                                                   | 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.                                   |
| <b>7</b>                                                                                                                                   | Vendor to confirm that all the dimensions, accuracies & surface finish of the component shall be met as per Technical Requirements & drawing.                                                                                                                                                                                                                                                                                                                                                                                                                                    | Vendor to confirm.                                                                                                               |
| <b>8</b>                                                                                                                                   | 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.                                                                                                               |
| <b>9</b>                                                                                                                                   | 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)

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|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| <br>HARIDWAR | <b>Technical Delivery Condition for Sub-contracting for Rough Machining of HP Inner Casing for Steam Turbine</b><br>Drg.no. 01050230600; 91010732552 | TTX/TDC/2026/011<br>Page 1 of 6 |
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### Scope of Work

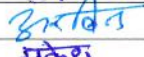
H.P. Inner Casing of Steam Turbine in rough machined condition with Blade grooves is proposed to be subcontracted for machining work of Complete joint plane machining, Pinning and Rough Vertical Borer work as per machining details & technical requirements furnished in drg.no. 01050230600 & 91010732552.

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

A) HP Inner Casing casting halves will be sent to vendor from BHEL Haridwar after control marking.

**B) Scope of work for machining by vendor includes the following: -**

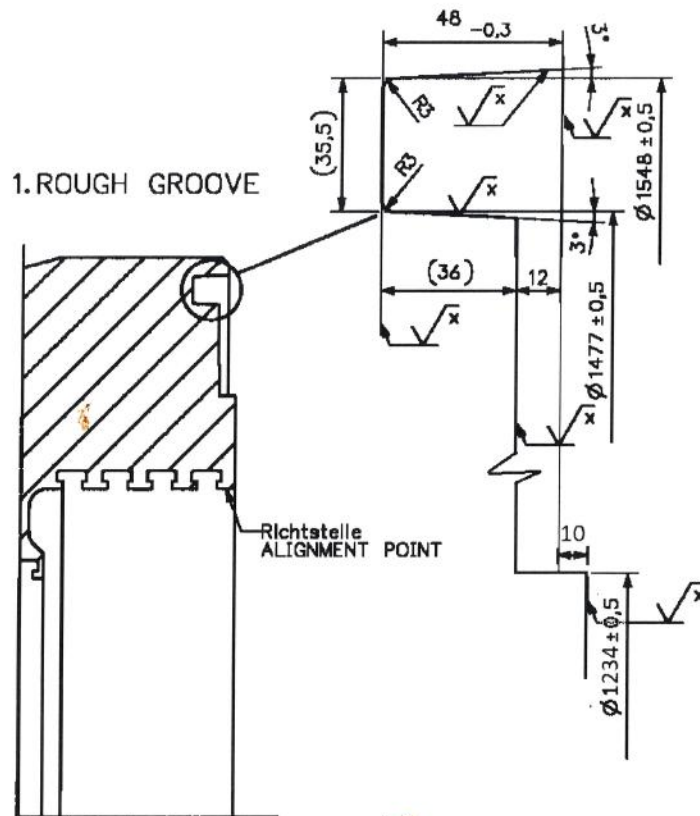
- 1) Joint Plane of casing halves will be machined with 0.5mm finishing allowance, with original drawing accuracies.
- 2) Machining of joint plane holes, back counters & threaded holes as per Section FA-FA, FB-FB, PC-PC, PD-PD, BA-BA, BB-BB, PF-PF, G-G & H-H (Sheet-3- H.P.I.C. Drg.) in both halves to be done, considering allowance on joint plane. Machining of four lifting holes as per section- UU, UIUI, view V & Y & view of upper part (sheet-3), Section WW & view WA of drg. Machining of holes for clamping (4 holes Dia. 50, depth 25mm) as per Section BB (Remark at zone Q-5, Sheet-1) of drg.
- 3) Transfer marking of joint plane holes to be done from U/H to L/H before machining of holes on L/H.
- 4) Refer Detail BC (Sheet-3, HPIC drg.), Groove dia. 146.72 H10+0.160 with width 3.2+0.1 is **not** to be machined by vendor.
- 5) Final machining of Guide Column holes (Section GG), Press Out holes (Section HH). For Pin holes (Section PF-PF), initially hole dia. 20 to be machined by vendor, in place of Pin dia. 30. **Guide Column hole (Section GG) not to be made in casing Lower Half.**
- 6) Final Machining of Taper pin holes to be done in assembled condition, as per Sec PF-PF. Two halves of the casings are to be assembled together with joint plane fasteners and taper pins (item no. 505, 506, 507, 508, 509, 510, 511 & 515 of CBOM 01050230600). These joint plane fasteners and taper pins shall be provided by BHEL. Vertical boring operation to be carried out in assembled condition. Alternate fasteners can be used for assembling the

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| TTX     | Pankaj Kumar, Mgr.         |  | 22/08/2026 |
| NCT     | R.P. Singh, Sr. Mgr.       |  | 22/08/2026 |
| TUM     | Arbind Kumar Choubey, DGM. |  | 22/08/2026 |
| TUM-PLG | Mukesh Kumar Singh, Mgr    |  | 22/08/2026 |
| DEPTT.  | NAME                       | SIGNATURE                                                                            | DATE       |



casing halves during Vertical Boring. However proper tightening of fasteners to be ensured.

- 7) Groove machining for stellite deposite, as per "1. ROUGH GROOVE" (sheet -3 - H.P.I.C. Drg.) is to be done. Refer below view for detailed dimensions. Allowances on faces & diameter to be considered during machining.



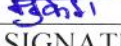
- 8) Refer Section AA, Zone- A-4, Sheet-1. OD 1630+/-0.5 & OD 1600+/-0.5 are to be machined with 4mm allowance (in diameter).
- 9) Refer Section AA, Zone- E-14, Sheet-1. Dia. 1590h6 is not to be machined. Only Dia. 1600 to be machined with 4mm allowance (in diameter). Dia. 1650+/-0.2 is also to be machined with 4mm allowance (in

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| TTX     | Pankaj Kumar, Mgr.         | <i>[Signature]</i> | 22/8/26  |
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| TUM     | Arbind Kumar Choubey, DGM. | <i>[Signature]</i> | 22/08/26 |
| TUM-PLG | Mukesh Kumar Singh, Mgr    | <i>[Signature]</i> | 22/8/26  |
| DEPTT.  | NAME                       | SIGNATURE          | DATE     |

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|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Rough Machining of HP Inner Casing for Steam Turbine</b><br><u>Drg.no. 01050230600; 91010732552</u> | <b>TTX/TDC/2026/011</b><br>Page 3 of 6 |
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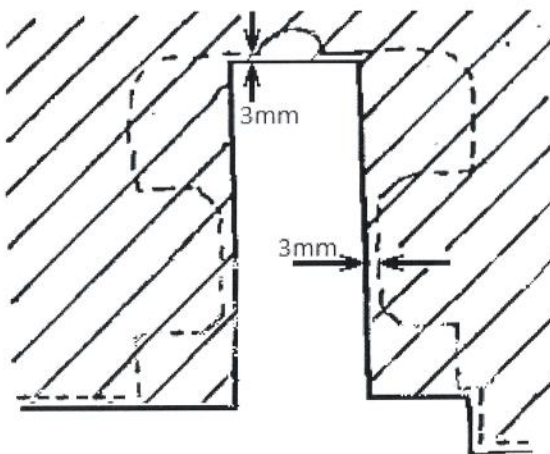
diameter). Taper 30 degree & grooves width 26+0.2 are not to be machined by vendor.

- 10) Refer Section BB (Sheet -1) Dia. 1840+/-4 is to be machined as Dia. 1840+/-1 mm with finish as per drawing.
- 11) Refer Section- ZB-ZB, L-L (Sheet-2). 4 holes Dia.48 & 4 holes Dia. 40 along with Detail RA are to be machined as per drawing, considering allowances at Joint plane & Outer Diameters. 16 Holes Dia.45 at 15 degree are NOT to be machined by vendor.
- 12) Refer Section I-I & II-II (Sheet-4). Two details are to be machined as per II-II. This includes machining of face at 730+2 from CL, M210x6 machining, Dia. 290 with R10.
- 13) Refer Detail-Z, Q1 & Q2 in H.P. Inner casing drawing (sheet -1). Shaft seal area T grooves are to be machined with 3mm finishing allowance (at tool point) on all axial dimensions & radial dimensions. In these grooves the T portion shall be machined at BHEL. **Only Neck width is to be rough machined.** Refer "T-Groove Rough Machining" detail.
- 14) Refer Detail-Z in H.P. Inner casing drawing. Groove on Dia. 853 with **width 21-0.5mm is not** to be machined by vendor.
- 15) Refer Groove Plan Casing drg. 91010732552. All details / dimensions are to be machined with 3mm finishing allowance (at tool point) on all axial dimensions & radial dimensions, with original drawing accuracies. In Blade grooves the T portion shall be machined at BHEL. **Only Neck width is to be rough machined.** Refer "T-Groove Rough Machining" detail.
- 16) 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 are **not to be machined** by vendor. Only dia. 743 is to be rough machined.

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**T- GROOVE ROUGH MACHINING**

**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 for specified scope of work 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.
  - Geometrical accuracies e.g. run-outs, concentricity, parallelity, perpendicularity etc. shall be fully met.

Reference surfaces are clearly marked in the concerned drawings.

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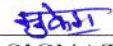
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| <br>HARIDWAR | <b>Technical Delivery Condition for Sub-contracting for Rough Machining of HP Inner Casing for Steam Turbine</b><br>Drg.no. 01050230600; 91010732552 | TTX/TDC/2026/011<br>Page 5 of 6 |
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- D) After 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.

**F) 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.
- 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.

G) All cross-referred documents given in Annexure-I

|         |                            |                                                                                      |            |
|---------|----------------------------|--------------------------------------------------------------------------------------|------------|
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| TUM-PLG | Mukesh Kumar Singh, Mgr    |   | 22/08/2026 |
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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Rough Machining of HP Inner Casing for Steam Turbine</b><br><b>Drg.no. 01050230600; 91010732552</b> | <b>TTX/TDC/2026/011</b><br><br>Page 6 of 6 |
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### ANNEXURE-I

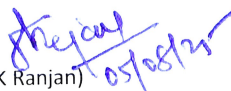
#### List of drawings / standards to be referred

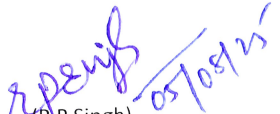
1. HP Inner Casing (Finish machined drawing).....01050230600
2. Groove Plan Casing .....91010732552
3. Blade groove.....31010730014
4. Blade groove.....31010730013
5. Blade groove.....31010705512
6. Blade groove.....31010730012
7. Log Sheet.....01050230600LS
8. Log Sheet.....91010732552LS
9. Machining of Alignment points in ST casing.....HW0690199
10. Product standards
  - a. Dimensions of threaded Holes.....ST01013
11. Packing & Preservation.....ST33004

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| TUM-PLG | Mukesh Kumar Singh, Mgr    |  | 22/08/26 |
| DEPTT.  | NAME                       | SIGNATURE                                                                           | DATE     |

**Pre-Qualifying Requirement (PQR)**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                  |
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|                | <b>HP INNER CASING (Drg. no. - 01050230600 &amp; Groove Plan Drg. No. - 91010732552<br/>(Finish Vertical Borer &amp; Horizontal Borer Work)</b>                                                                                                                                                                                                                                                                                                                                                                               | <b>Indent No.20250427</b><br><b>TTX/P&amp;R/2025/134</b>                                                                         |
| <b>SL. No.</b> | <b>REQUIREMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>REMARKS</b>                                                                                                                   |
| <b>1</b>       | 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. 01050230600 and applicable Groove Plan machining Drg No. 91010732552<br><br>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.                                                             |
| <b>2</b>       | Vendor must have suitable toolings / facility such as Marking Table / Machine Bed etc. in good working condition, to facilitate marking / transfer marking of job (as required). Vendor must have suitable facility for lifting / handling the subject job.                                                                                                                                                                                                                                                                   | Vendor to confirm.                                                                                                               |
| <b>3</b>       | <b>Turning / Vertical Boring Operation :-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                  |
| <b>3.1</b>     | CNC Vertical Boring Machine, suitable for Vertical Boring of HP Inner Casing as per drawing & T.R.'s requirement.<br>Machine Requirement :<br>(a) Table diameter of machine = 2500 mm or more.<br>(b) Maximum Turning Height of job = 3500 mm or more.<br>(c) Ram Stroke =2800 mm or more.<br>(d) Weight capacity of machine = 40 Tons or more.                                                                                                                                                                               | (a) Vendor to confirm.<br>(b) Vendor to provide machine details / specification for referred operation.                          |
| <b>4</b>       | <b>Horizontal Boring work :-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (a) Vendor to confirm.<br>(b) Vendor to provide machine accuracies & Geometrical details / specification for referred operation. |
| <b>4.1</b>     | 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.                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                  |
| <b>5</b>       | <b>Fitting work :-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                  |
| <b>5.1</b>     | Vendor must have suitable facility / arrangement for different fitting / assembly works to be done as per drawing & TR.                                                                                                                                                                                                                                                                                                                                                                                                       | Vendor to confirm.                                                                                                               |
| <b>6</b>       | 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.                                   |
| <b>7</b>       | Vendor to confirm that all the dimensions, accuracies & surface finish of the component shall be met as per Technical Requirements & drawing.                                                                                                                                                                                                                                                                                                                                                                                 | Vendor to confirm.                                                                                                               |
| <b>8</b>       | 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.                                                                                                               |
| <b>9</b>       | 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)



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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Inner Casing for Steam Turbine</b><br><b>Drg.no. 01050230600; 91010732552</b> | Indent no. 20250427<br>TTX/ TDC/2025/132<br>Page 1 of 5 |
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### Scope of Work

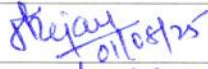
H.P Inner Casing of Steam Turbine in finish machined condition with Blade grooves is proposed to be subcontracted for Finish Machining work as per machining details & technical requirements furnished in drg.no. 01050230600 & 91010732552.

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

A) Casing will be sent to supplier from BHEL Haridwar after completing Joint Plane Horizontal Boring work & Rough Vertical Boring work. Casing will be supplied in Assembled condition (with studs, cap nuts & pins).

Following work shall be completed at BHEL Haridwar, before sending the Casing to vendor in assembled condition:

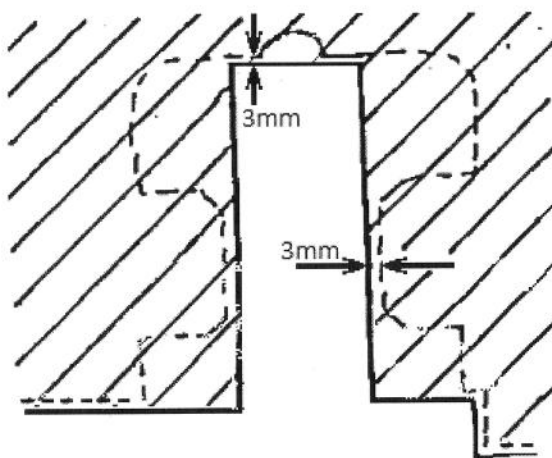
- Joint Plane will be in finish machined condition & colour matching completed as per “REQUIREMENTS FOR STEAM TIGHTNESS” (specified at sheet-1-H.P.I.C. Drg.).
- Machining of joint plane holes, back counters, threaded holes, taper pin holes as per Section FA-FA, FB-FB, PC-PC, PD-PD, BA-BA, BB-BB, PF-PF, G-G & H-H (Sheet-3- H.P.I.C. Drg.) in both halves done.
- Guide Column hole (Section GG) will not made in Casing Lower Half at BHEL. Position of these holes shall be marked in BHEL. **These holes to be made by vendor.**
- Groove machining for stellite deposite, Groove Stelliting & machining of Stellite groove will be done. Refer “1. ROUGH GROOVE”, “2. STELLITE” at sheet -3 - H.P.I.C. Drg.
- 4 Holes dia. 65 as per Section X2-X2 (sheet-4) / XC-XC (sheet-2). 4 holes dia. 40 with detail & 4 holes Dia. 48 with detail as per Section Z1-Z1 / ZB-ZB, Section LL & Detail RA (sheet -2 & 4- H.P.I.C. Drg.).
- Details as per Section I1-I1 (sheet-4- H.P.I.C. Drg.).
- Hydraulic Testing of test chamber 1 & 2 (sheet-4- H.P.I.C. Drg.).
- Refer Detail-Z, Q1 & Q2 in H.P. Inner casing drawing. Shaft seal area T grooves shall be machined with 3mm finishing allowance (at tool point) on all axial dimensions & radial dimensions. In these grooves the T portion

|         |                                |                                                                                      |
|---------|--------------------------------|--------------------------------------------------------------------------------------|
| TTX     | I K Ranjan, Mgr.               |  |
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| TUM     | Arbind Kumar Choubey, Sr. Mgr. |  |
| TUM-PLG | Manoj Kr Gupta, Sr. Mgr.       |  |
| DEPTT.  | NAME                           | SIGNATURE                                                                            |

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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Inner Casing for Steam Turbine</b><br><b>Drg.no. 01050230600; 91010732552</b> | Indent no. 20250427<br>TTX/ TDC/2025/132<br>Page 2 of 5 |
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shall not be machined at BHEL. **Only Neck width shall be rough machined.** Refer “T-Groove Rough Machining” detail.

- Refer Groove Plan Casing drg. 91010732552. All details shall be machined with 3mm finishing allowance (at tool point) on all axial dimensions & radial dimensions. In Blade grooves the T portion shall not be machined at BHEL. **Only Neck width shall be rough machined.** Refer “T-Groove Rough Machining” detail.



**T- GROOVE ROUGH MACHINING**

#### **B) Scope of Work for vendor:**

- Scope of work for Vendor includes **Complete finish machining of casing as per HP Inner Casing & Groove Plan Casing drawing**, except following points:

| Reference<br>(Section/View)                                     | Dimension (in mm)<br>as per Drawing | Dimension (in mm) to be Made                                                |
|-----------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------|
| <b>View AA</b><br>(Zone-G-11, Sheet-1,<br>Drg. No. 01050230600) | Dia. 1590h6                         | Machine Dia. 1600±0.5 ( <b>Finish machining to be done by BHEL</b> )        |
| <b>View Y</b><br>(Zone-I-14, Sheet-1, Drg.<br>No. 01050230600)  | Groove width 30H11<br>& depth 9-0.1 | Do not machine the groove<br>( <b>Groove machining to be done by BHEL</b> ) |

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| TTX     | I K Ranjan, Mgr.               | <i>[Signature]</i> 01/08/25 |
| NCT     | R.P. Singh, Sr. Mgr.           | <i>[Signature]</i> 02/08/25 |
| TUM     | Arbind Kumar Choubey, Sr. Mgr. | <i>[Signature]</i> 02.08.25 |
| TUM-PLG | Manoj Kr Gupta, Sr. Mgr.       | <i>[Signature]</i>          |
| DEPTT.  | NAME                           | SIGNATURE                   |



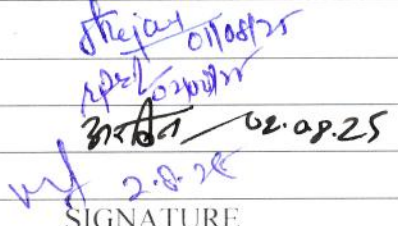
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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Inner Casing for Steam Turbine</b><br>Drg.no. 01050230600; 91010732552 | Indent no. 20250427<br>TTX/ TDC/2025/132<br>Page 3 of 5 |
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|                                                                          |                                                      |                                                                                                                                                                         |
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|                                                                          | Flange Width<br>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.<br><b>(Finish machining to be done by BHEL)</b>                                                                                      |
| View SS<br>(Zone-B-15, Sheet-1,<br>Drg. No. 01050230600)                 | Dia. 1599, width 30                                  | Do not machine Dia. 1599.<br><b>(Machining to be done by BHEL)</b>                                                                                                      |
|                                                                          | I-ring groove<br>diameter 1540 &<br>1485, depth 49mm | After Stellite welding, only rough machining & DP testing to be done as per detail -3 (contour for surface crack test).<br><b>(Finish Machining to be done by BHEL)</b> |
| Section VV<br>(Zone-I-14, Sheet-1, Drg. No. 01050230600)<br>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. Guide Column hole (Section GG) will not made in Casing Lower Half at BHEL. Position of these holes shall be marked in BHEL. **These holes to be made by vendor.**

**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.

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| TTX     | I K Ranjan, Mgr.               | <br>SIGNATURE |
| NCT     | R.P. Singh, Sr. Mgr.           |                                                                                                   |
| TUM     | Arbind Kumar Choubey, Sr. Mgr. |                                                                                                   |
| TUM-PLG | Manoj Kr Gupta, Sr. Mgr.       |                                                                                                   |
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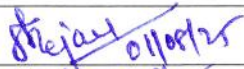
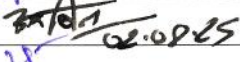
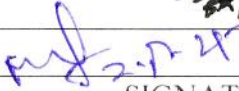
- BHEL shall furnish clarifications, if any, w.r.to scope of work or drg. dimensions / technical requirements to the vendor to enable it to submit technical / commercial offer.
- Party must ensure that all requirements indicated in the drg. regarding:
  - Surface finishes (Ra value indicated in microns).
  - Sizes and tolerances.
  - 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.

**F) 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.

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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Inner Casing for Steam Turbine</b><br><b>Drg.no. 01050230600; 91010732552</b> | Indent no. 20250427<br>TTX/ TDC/2025/132<br>Page 5 of 5 |
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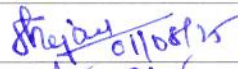
- Ensure that all lifting lugs and bollards are clearly marked and easily accessible, as lifting and handling of the component together with its skid shall be carried out using the bollards provided on the component.
- Use shock-absorbing materials (e.g., rubber pads) between the component and the skid/base 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.
- 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.

G) All cross-referred documents given in Annexure-I

## ANNEXURE-I

### List of drawings / standards to be referred

1. HP Inner Casing (Finish machined drawing).....01050230600
2. Groove Plan Casing .....91010732552
3. Blade groove.....31010730014
4. Blade groove.....31010730013
5. Blade groove.....31010705512
6. Blade groove.....31010730012
7. Log Sheet.....01050230600LS
8. Log Sheet.....91010732552LS
9. Packing & Preservation.....ST33004
10. casting Drg. No. 01050256903

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**Pre-Qualifying Requirement (PQR)**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                  |
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|                | <b>HP OUTER CASING- INLET END (Drg. no. -01052630500)</b><br><b>(Complete Finish Machining)</b>                                                                                                                                                                                                                                                                                                                                           | <b>Indent No. 20250428</b><br><b>TTX/PQR/2025/137</b>                                                                            |
| <b>SL. No.</b> | <b>REQUIREMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>REMARKS</b>                                                                                                                   |
| <b>1</b>       | Only those vendors should quote who have following machine, facilities installed & operational at their works for following operations for machining, fitting works of "HP Outer Casing- Inlet End" as per Drg. No. 01052630500 .<br><br>Raw material casting (Drg. No. 01052630901) shall be supplied to vendor after control marking for complete finish machining as per drawing.                                                      | Vendor to confirm.                                                                                                               |
| <b>2</b>       | Vendor must have suitable tooling / facility such as Marking Table / Machine Bed etc. in good working condition, to facilitate marking. Vendor must have suitable facility for lifting / handling the subject job.                                                                                                                                                                                                                        | Vendor to confirm.                                                                                                               |
| <b>3</b>       | <b><u>Turning / Vertical Boring Operation :-</u></b>                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                  |
| <b>3.1</b>     | CNC Vertical Boring Machine, suitable for Vertical Boring of HP Outer Casing- Inlet End as per drawing & T.R.'s requirement.<br>Machine Requirement :<br>(a) Table diameter of machine = 4000 mm or more.<br>(b) Maximum Turning Height of job = 2800 mm or more.<br>(c) Ram Stroke =2600 mm or more<br>(d) Weight capacity of machine = 45 Tons or more.                                                                                 | (a) Vendor to confirm.<br>(b) Vendor to provide machine details / specification for referred operation.                          |
| <b>4</b>       | <b><u>Horizontal Boring work :-</u></b>                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                  |
| <b>4.1</b>     | Vendor must have suitable CNC Horizontal Boring machine with suitable attachments (i.e. UT-800 or UT-1000) for machining of different details, holes, Threaded holes, Slots as per Drg. and TR requirement. Required Machine details as below :<br>(i) SPINDLE + RAM (Movement) : 2000 mm<br>(ii) X-AXIS : 4000 or more, Y-AXIS : 3500 mm or more,<br>(iii) TABLE SIZE : 3000 x 3000 mm or more<br>(iv) WEIGHT CAPACITY – 45 Ton or more. | (a) Vendor to confirm.<br>(b) Vendor to provide machine accuracies & Geometrical details / specification for referred operation. |
| <b>5</b>       | Vendor need to submit manufacturing process, tooling used for machining Butress Threads.                                                                                                                                                                                                                                                                                                                                                  | Vendor to submit the details                                                                                                     |
| <b>6</b>       | <b><u>Fitting work :-</u></b>                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                  |
| <b>6.1</b>     | Vendor must have suitable facility / arrangement for different fitting / assembly works to be done as per drawing & TR.                                                                                                                                                                                                                                                                                                                   | Vendor to confirm.                                                                                                               |
| <b>7</b>       | 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.                                   |
| <b>8</b>       | Vendor to confirm that all the dimensions, accuracies & surface finish of the component shall be met as per Technical Requirements & drawing.                                                                                                                                                                                                                                                                                             | Vendor to confirm.                                                                                                               |
| <b>9</b>       | Vendor to note that all tools, measuring equipment, technological items etc. required for manufacturing of subject item shall be arranged by vendor, in case of order.                                                                                                                                                                                                                                                                    | Vendor to confirm.                                                                                                               |
| <b>10</b>      | 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)

|                                                                                                      |                                                                                                                                                            |                                                              |
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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Outer Casing- Inlet End for Steam Turbine</b><br><u>Drg.no. 01052630500</u> | Indent no. 20250428<br>TTX/ TDC/2025/.....136<br>Page 1 of 4 |
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### Scope of Work

H.P Outer Casing- Inlet End of Steam Turbine in finish machined condition is proposed to be subcontracted for Finish Machining work as per machining details & technical requirements furnished in drg.no. 01052630500.

H.P Outer Casing- Inlet End raw material with material specification HW19688 and casting Drg.01052630901 will be sent.

#### A) Scope of work at BHEL, Haridwar:

- Control marking
- All the connection and plates (item no. 2 to 4) shall be weld and assembled before hydraulic test at BHEL Haridwar.
- Hydraulic testing after complete machining shall be done at BHEL Haridwar.
- All operations detailed in section Z1-Z1, Z2-Z2, and View-Z3 on sheet-3 shall be carried out at the BHEL Haridwar works.

#### B) Scope of Work for vendor:

Vendor to carry out complete finish machining of Outer Casing -Inlet end as per machining details & technical requirements furnished in drg.no. 01052630500 consideration of following points:

- Machining should be carried out taking care of Rough machined (Casting) drg. as well as finish machined drg. Technical requirements specified in the rough machined drg. should be taken care of before carrying out finish machining.
- Vendor to machine details with reference to Guide dia. 2120 +0.2+0.1 (D) (Detail J, H & L; Sheet- 3) in **one setting**, maintaining required relative accuracies as per drg. are:
  - I-ring groove detail (Groove detail with ID 1490+/-0.2. Refer Detail L, Sheet-3)

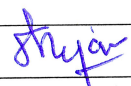
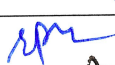
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| TTX     | I K Ranjan, Mgr.               |  | 02.08.25 |
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| DEPTT.  | NAME                           | SIGNATURE                                                                            | DATE     |

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| <br><b>HARIDWAR</b> | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Outer Casing- Inlet End for Steam Turbine</b><br><u>Drg.no. 01052630500</u> | Indent no. 20250428<br>TTX/ TDC/2025/136<br>Page 2 of 4 |
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- U-Seal sitting area & step detail (Refer Detail H, Sheet -3. Steps, faces & complete Detail with Dia. 1772 H7).
- Step face at 95-0.03mm from Top face (B) & details (Refer View H, Zone N-3, sheet -3).
- Shaft seal bores (Refer Detail J, Sheet -3. Inner dia. 840+0.09, 800 etc with steps & faces).
- Dimension 110 and all the bracketed dimension is a reference dimensions only (refer details G, Sheet-3).
- 50%-dimension values and dimension appears without brackets are to be maintained as per drg. after machining bosses as per drawing dimension.
- Buttress thread (Detail H & F. Thread with I.D 1865+0.2 mm & pitch 50 mm) machining is to be done before finish machining of the details as referred in point no.-1.
- Final machining cuts on these areas requiring high relative accuracy tolerances should be taken within short span of time in one go. These dimensions & runouts etc. should be checked & recorded by vendor's quality department after complete machining of job & before unloading job from machine.
- Other details requiring relative accuracies shall be as per drawing.

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

- 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

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| <br>HARIDWAR | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Outer Casing- Inlet End for Steam Turbine</b><br><u>Drg.no. 01052630500</u> | Indent no. 20250428<br>TTX/ TDC/2025/136<br>Page 3 of 4 |
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proposed. Further machining will be suspended till BHEL approves corrective action.

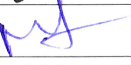
- BHEL shall furnish clarifications, if any, w.r.to scope of work or drg. dimensions / technical requirements to the vendor to enable it to submit technical / commercial offer.
- Party must ensure that all requirements indicated in the drg. regarding:
  - Surface finishes (Ra value indicated in microns).
  - Sizes and tolerances.
  - 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.

**F) 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.

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- 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.
- 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.

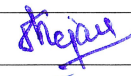
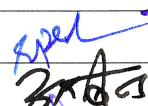
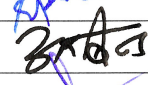
G) All cross-referred documents given in Annexure-I.

### ANNEXURE-I

#### List of drawings / standards to be referred

1. **Casting for HP Outer Casing-Inlet End (Rough machined):** 0-10526-30901
2. **HP Outer Casing-Inlet End (Finish machined drawing):** 0-10526-30500
3. **Log Sheet:** 0-10526-30500 LS
4. **Material Specification:** HW19688
5. **Product Standard:** ST01013, ST01030
6. **Packing & Preservation.....** ST33004

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4252

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| <b>Pre-Qualifying Requirement (PQR)</b>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                           | Indent No.20250431                                                                                                               |
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| <b>HP OUTER CASING- EXHAUST END (Drg. no. - 01052730500)</b><br><b>(Complete Finish Machining)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                           | TTX/PQR/2025/142                                                                                                                 |
| 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 Outer Casing - Exhaust End" as per Drg. No. 01052730500.<br><br>Raw material castings (Drg. No. 01052756901) shall be supplied to vendor after control marking for complete finish machining as per drawing.                                                   | Vendor to confirm.                                                                                                               |
| 2                                                                                                  | Vendor must have suitable tooling / facility such as Marking Table / Machine Bed etc. in good working condition, to facilitate marking. Vendor must have suitable facility for lifting / handling the subject job.                                                                                                                                                                                                                        | Vendor to confirm.                                                                                                               |
| 3                                                                                                  | <b>Turning / Vertical Boring Operation :-</b>                                                                                                                                                                                                                                                                                                                                                                                             | (a) Vendor to confirm.<br>(b) Vendor to provide machine details / specification for referred operation.                          |
| 3.1                                                                                                | CNC Vertical Boring Machine, suitable for Vertical Boring of HP Outer Casing - Exhaust End as per drawing & T.R.'s requirement.<br>Machine Requirement :<br>(a) Table diameter of machine = 4000 mm or more.<br>(b) Maximum Turning Height of job = 2100 mm or more.<br>(c) Ram Stroke = 1900 mm or more<br>(d) Weight capacity of machine = 30 Tons or more.                                                                             |                                                                                                                                  |
| 4                                                                                                  | <b>Horizontal Boring work :-</b>                                                                                                                                                                                                                                                                                                                                                                                                          | (a) Vendor to confirm.<br>(b) Vendor to provide machine accuracies & Geometrical details / specification for referred operation. |
| 4.1                                                                                                | Vendor must have suitable CNC Horizontal Boring machine with suitable attachments (i.e. UT-800 or UT-1000) for machining of different details, holes, Threaded holes, Slots as per Drg. and TR requirement. Required Machine details as below :<br>(i) SPINDLE + RAM (Movement) : 2000 mm<br>(ii) X-AXIS : 4000 or more, Y-AXIS : 2500 mm or more,<br>(iii) TABLE SIZE : 3000 x 3000 mm or more<br>(iv) WEIGHT CAPACITY – 30 Ton or more. |                                                                                                                                  |
| 5                                                                                                  | <b>Fitting work :-</b>                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                  |
| 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 equipment, 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)



|                                                                                               |                                                                                                                                                   |                                                         |
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| <br>HARIDWAR | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Outer Casing- Exhaust End for ST</b><br><u>Drg.no. 01052730500</u> | Indent no. 20250431<br>TTX/ TDC/2025/134<br>Page 1 of 4 |
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### Scope of Work

H.P Outer Casing- Exhaust End of Steam Turbine in finish machined condition is proposed to be subcontracted for Finish Machining work as per machining details & technical requirements furnished in drg.no. 01052730500.

H.P Outer Casing- Exhaust End raw material with material specification HW19581 and casting Drg.01052756901 will be sent.

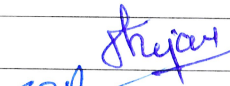
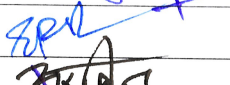
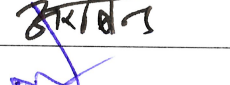
#### A) Scope of work at BHEL, Haridwar:

- Control marking
- All the connection and plates (item no. 2 to 7) shall be weld assembled as per details shown in the casting drawing to be done BHEL Haridwar.
- Hydraulic testing after complete machining shall be done at BHEL Haridwar.

#### B) Scope of Work for vendor:

Vendor to carry out complete finish machining of Outer Casing -Exhaust end as per machining details & technical requirements furnished in drg.no. 01052730500 consideration of following points:

- Machining should be carried out taking care of Rough machined (Casting) drg. as well as finish machined drg. Technical requirements specified in the rough machined drg. should be taken care of before carrying out finish machining.
- Vendor to carry out finish turn for complete casing in **one setting** including shaft seal area, specially detail P (Sh-1) & detail N (Sh-2).
- ID dia. 800-1 is to be machined up to 300mm from pipe face after machining pipe face at 2000 mm from casing center line. (Refer view at Zone G-8 at Sh-3).

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| TUM     | Arbind Kumar Choubey, Sr. Mgr. |  | 02-08-25 |
| TUM-PLG | Manoj Kr Gupta, Sr. Mgr.       |  | 02-08-25 |
| DEPTT.  | NAME                           | SIGNATURE                                                                            | DATE     |

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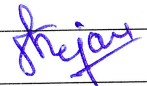
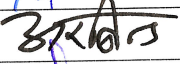
- The dimension shown as ~205 is a reference dimension. (Refer details W, Sh-1)
- All the bracketed dimension is a reference dimensions only mentioned in the drawing.
- Other details requiring relative accuracies shall be as per drawing.

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

- 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.
  - 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.

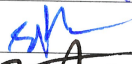
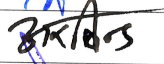
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| <br>HARIDWAR | <b>Technical Delivery Condition for Sub-contracting for Finish Machining of HP Outer Casing- Exhaust End for ST</b><br><u>Drg.no. 01052730500</u> | Indent no. 20250431<br>TTX/ TDC/2025/134<br>Page 3 of 4 |
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**F) 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.
- 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.

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

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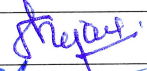


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### ANNEXURE-I

#### List of drawings / standards to be referred

1. Casting for HP Outer Casing-Exhaust End (Rough machined): 01052756901
2. HP Outer Casing-Exhaust End (Finish machined drawing): 01052730500
3. Log Sheet: 01052730500LS
4. Material Specification: HW19581
5. Product Standard: ST01013, ST01030
6. Packing & Preservation..... ST33004

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