

GENERAL REQUIREMENTS FOR QUALITY ASSURANCE**Legends used in Quality Assurance Plan:**

W: Witness, not hold, BHEL to give advance notice to customer to associate during checks/tests but work shall proceed.

R: Review of records (by customer as indicated under column 'C').

H/CHP: Customer Hold Point

MTC: Material Test Certificate

Obs. Sheet: Observation Sheet

LS: Log Sheet

COC: Certificate of Compliance

Abbreviations:

CRITICAL: - The characteristic of a component, process or operation failure of which will surely cause operating failure or intermittent troubles which is difficult to rectify at site or render the unit unfit for use or cause safety hazards.

MAJOR: - The characteristic of a component, process or operation whose failure may cause operation failure which cannot be readily corrected at site or cause substandard performance, increased erection and maintenance cost, reduce life or seriously affect aesthetics.

MINOR: - The characteristic of a component, process or operation whose failure neither materially reduce the usability of the product in operation nor does it affect the aesthetic aspects.

1. H/CHP-Customer Hold Point: NPCIL QS witness/clearance is mandatory before proceeding with further activities. This activity shall be kept under hold till inspection clearance or written waiver is obtained from the agency responsible for this stage (NPCIL QS/their authorized representative).

2. W-Witness point: Witness points are critical steps in manufacturing and examination/inspection/testing where the supplier is obliged to notify NPCIL QS sufficiently in advance (at least 7 days) the start of the operation/test so that the same may be witnessed. The above notice periods are for BHEL shop Manufactured items only. For Sub-Contracted Items notice period for "W" shall be 15 days. The supplier may proceed with the work past a witness point in consultation with NPCIL, QS or their authorized representative.

3. All test reports, test certificates & Quality control records shall be reviewed & accepted by BHEL before submitting the same for the review of NPCIL OS.

4. Castings shall be procured from NPCIL/BHEL approved Foundries. Pouring for casting (Body & Disc) shall be done along with test bar. First pouring of casting i.e. first piece in case of identical items for same vendor, will be witnessed by the supplier i.e. BHEL/NPCIL approved TPIA & sub vendor (as

applicable). SS casting and forging shall be received in pickled & passivated condition. 7 days in advance intimation shall be given to all agencies.

5. Raw-material on the basis of co-related original or co-related computer-generated material test certificate (MTC), originated from OEM (sealed and signed by OEM) from NPCIL/BHEL approved material manufacturer is acceptable. In absence of co-related material test certificate, all items will be PMI tested for establishing no. of heat /lot. And subsequent tests as per material standard to be conducted on sample basis. Sampling will be decided on the basis of PMI. The samples for chemical and mechanical tests shall be drawn and witnessed by BHEL / NPCIL Approved TPI /NPCIL, as mutually agreed. Chemical and mechanical tests shall be conducted in NPCIL approved / NABL accredited laboratory only. BHEL QS shall submit all, MTCs and test reports after their review & acceptance to NPCIL, QS for final review and clearance. This review / verification & clearance by NPCIL QS is CHP. Stamping of raw material and stamp transfer shall be done by BHEL QS/NPCIL QS.

6. Wherever Customer Hold Point (CHP) is indicated, the supplier is to notify NPCIL QS or its authorized representative at least 7 days in advance The above notice periods are for BHEL shop Manufactured items only. For Sub-Contracted Items notice period for "CHP" shall be 15 days.

7. Sample selection, for random witnessing of the inspection, examination, testing shall be done by NPCIL QS. Sampling plan, unless otherwise indicated, should generally be in accordance with IS 2500, Part-1, AQL: 1%, Normal Level-II. (Refer - QAD/MISC/PROC/SAMPLING/001 Rev.: 0).

8. All the procedures mentioned in the QAP like NDE procedures, hydro test, WPS etc. shall be checked, reviewed and approved by BHEL before submitting to NPCIL for approval. All NDE procedures shall have approval of Level III qualified personnel and prepared by Level- II person of BHEL or Sub-vendor.

9. The heat treatment furnaces shall have temperature recorder and valid calibration report. Calibration shall be done as per national standard /international standard/ as per NPCIL specification, if specified. All the calibration report will be checked by the NPCIL QS.

10. Calibrated instruments/gauges/thermocouples etc. shall be used during inspection and testing.

11. All NDT shall be carried out by Level-I/Level-II/Level-III & evaluated by Level-II/Level-III qualified person from SNT-TC-1A/ ISO 9712/IS 13805.

12. Chemicals used for LPT and MPT shall be from NPCIL approved brands only. BHEL will review TC's and reports before submitting to NPCIL.

13. Welding consumables shall be from NPCIL approved brand list. BHEL need to submit certified material test report (CMTR) certificate as per ASME BPVC II C for welding consumables to be used for jobs of NINS. All batches of electrodes shall be tested as per referencing document.

- 14.** Supplier can prepare their own NDE procedures meeting requirement of NPCIL specification and submit for approval. Alternatively, NPCIL procedure can be adopted by the supplier. The supplier shall submit the same and technique sheet along with modification, if any, for approval.
- 15.** Inspection stages in the QAP are considering suppliers are from India based on past experience. In case of foreign suppliers, the QAP remains same, but the stage inspection extent (witness and hold points) may change, based on the type and strength of supplier to be finalized after mutual discussion. Change in inspection extent will depend upon the participation of BHEL during manufacturing of items in foreign countries. It is expected that the participation of BHEL will be same or more as indicated in the QAP.
- 16.** Spares shall undergo same testing/inspection requirements as per original items.
- 17.** All items shall be stamped by vendor's name/monogram apart from item description, size, serial no., class, material code, rating, grade, etc. and meeting MSS-SP-25 and NPCIL specification.
- 18.** Certified material test report (indicating material, size, item description, lot no., heat no., NDE report nos., check test certificate, vendors final certificate nos., etc.) shall be submitted.
- 19.** The contractor / manufacturer shall prepare "History Docket" for the items supplied, compiling various inspection / test reports and also other relevant documents as per the tender specification/NPCIL procedure, and submit to NPCIL QS prior to issue of complete/ final Shipping Release (SR) (on completion of entire PO/SPO). As the final SR will be a part of History Docket, issuance of final SR & review of History Docket by NPCIL, QA shall be done simultaneously.
- 20.** Bevel end/ SW ends shall be suitably protected from any damage.
- 21.** In case of material/item acceptable to NPCIL on the basis of certificate of compliance (COC), the same to be provided by OEM and shall be certified by BHEL.
- 22.** Reference documents as mentioned in Quality Assurance Plan shall be shown to Customer at the time of inspection for BHEL shop manufactured items.
- 23.** Brazer and Brazing Procedure Qualification shall be NPCIL approved. Brazer and Brazing Procedure Qualification shall be done in the presence of NPCIL QA representative. Only approved Brazer by NPCIL shall perform NPCIL jobs.
- 24.** During manufacturing, only latest revision of drawings/specifications/procedures/code shall be used.
- 25.** Whenever witnessing (W) by NPCIL is specified in QAP, BHEL's representative shall also witness the test.
- 26.** Inspection call should be raised such that there is optimization of visits and inspection activities.

Note on GR:

Wherever, BHEL/NPCIL is mentioned, BHEL shall mandatorily carry out inspection activities and submit the reports to NPCIL QS for review and clearance.

However, BHEL can go ahead for further manufacturing activities based on their own review and acceptance.

NPCIL reserves the right to carry out inspection activities as per QAP.

BHEL will inform the manufacturing/inspection stages well in advance to NPCIL QS.

1. Ordering shall be done on NPCIL approved vendors only.
2. Vendor to endorse attached BHEL SQP "QA/CF/QP/323 Rev. 06".
3. Vendor to confirm 'Inspection by BHEL/NPCIL approved TPIA as per attached BHEL SQP.
4. Bidder to confirm & endorse attached "General Requirement" & other technical documents along with offers.

For inspections at works

1. Bidder/vendor are required to quote for material supply only in their offer. BHEL shall place Purchase order (PO) only for material supply on Vendor. Inspection is in the scope of BHEL (Inspections will be done by BHEL or BHEL appointed & NPCIL approved TPI).
2. All necessary coordination for inspection by BHEL or BHEL appointed TPIA will be done by vendor.
3. Notice period for inspection call shall be 60 days for inspection at foreign location and 15 days for inspection in India.

For Vendor approval

1. Bidder/vendor are required to submit their credentials in attached formats.
2. At any stage, if it is felt that under-performing/improper/unjustified sub-vendors are recommended by bidder, BHEL/NPCIL shall have right to visit the sub-vendor premises for further evaluation and take necessary decision with respect to sub-vendor approval to maintain the quality of the items.