Enq 4002300003 dt 21.08.2023
Manufacture & Supply of Seamless Pipes (CS & AS) for NPCIL GHAVP project

Date- 27.09.2023

Dear Sir / Madam,

Sub: Manufacture & Supply of Seamless Pipes (CS & AS) for NPCIL GHAVP project as per BHEL Enquiry No 4002300003 dt 21.08.2023.

With regard to the subject Enquiry for Manufacture & Supply of Seamless Pipes (CS & AS) for NPCIL GHAVP project as per BHEL Enquiry No 4002300003 dt 21.08.2023, Corrigendum 3 dt 27.09.2023 is issued for the following-

- Clause No 2.0 of Technical Specifications TP10495 and TP10620 have been revised. R01 of Technical Specifications TP10495 and TP10620 are enclosed. Accordingly, previous revision R00 of Technical Specifications TP10495 and TP10620 stands withdrawn.
- Tender due date for bid submission has been extended till 11.00 AM IST on 03.10.2023. Part I bids will be opened at 04.00 PM IST on 03.10.2023.

Prospective bidders are requested to take note and submit / revise their quote if needed before the tender due date.

For BHEL Trichy,

Anil Sree
Dy.Manager / MM / RM
BHEL Trichy, Tamil Nadu, India

Seamless Steel Pipes for Nuclear requirements – ASME SA106 GR.B

1.0 GENERAL:

Materials: ASME SA106 GRB.

This Technical Delivery Condition specifies the requirements in addition to ASME SA106.

2.0 BILLET/BLOOM REQUIREMENTS:

The billets/blooms shall be fully killed and vacuum degassed.

Ladle analysis is required for all steels. Chemistry shall be controlled as given below

Ladle Analysis: SA 106 GRB = Carbon: 0.25% Max.

The billet/bloom shall conform to the chemical and process requirements of respective pipe specifications.

3.0 CHEMICAL COMPOSITION:

Product analysis on pipes is required for all steels. Chemistry shall be controlled as per applicable material specifications and the elements including Carbon as indicated in Clause 2.0 above shall also be reported in the product analysis.

4.0 DIMENSION & TOLERANCES:

a) The dimensional standard shall be as per ANSI B36.10. The tolerances shall be as per SA 106 and drawings as mentioned in PO.
b) Length and Quantity Tolerance as per P.O.
c) The pipes shall be supplied with plain ends

Actual weight per meter shall be indicated in mill test certificate.

5.0 HEAT TREATMENT & MECHANICAL TESTS:

5.1 HEAT TREATMENT

CS: Hot Finished: OD ≤ 76.1mm no heat treatment required. OD > 76.1mm shall be in Normalised condition.

CS: Cold Finished: All Sizes – In Sub-critical annealed, fully annealed or in Normalised condition.

5.2 MECHANICAL TESTS:

As per specification (Tensile and Bending) . Quantum of test: As per specification - For each nominal size per heat per heat treatment batch. (Minimum 2 pipes for first 100 pipes and 1 per 100 or part thereof for pipes over 100 numbers, as per IBR).

Ys and Ts shall be as per specifications.

6.0 SUPPLEMENTARY TESTS:

These are applicable to SA106 Gr.B. The supplementary test results shall be indicated in the Test Certificate along with the mandatory test results.

6.1 Product Analysis (S1): - Product analysis shall be as per supplementary requirements of SA 106.

6.2 Flattening test (S3): - Flattening test shall be carried out as per SA 106 requirement.

7.0 NON DESTRUCTIVE TEST:

Each pipe shall be Hydro tested as per ASTM A 530 or approved drawing test pressure.

8.0 REPAIR:

Repair by welding is prohibited. The pipe shall meet the dimensional tolerance (clause 4.0 above) after any mechanical repair as permitted in the standard.

9.0 WORKMANSHIP:

The Inside & outside surfaces of the pipes shall be free from any imperfections & defects like laps,seams,folds, cracks, pitting etc,. Localised imperfections, if any,may be removed by grinding or skin machining only, ensuring the wall thickness, inside and outside diameter to provide workmanship like finish. Local depressions or ground spots are not acceptable. Loose scales shall be removed by blast cleaning in both inside and outside surface. Repair by welding is prohibited.

10.0 MARKING AND COLOUR CODING:

10.1 The pipes despatched to BHEL Stores shall be paint stencilled & hard punched with the following details.

1) PO Number 2) Supplier's emblem/code 3) Size & Specification 4) Heat number
5) Pipe number 6) Inspector's seal

10.2 The pipes despatched to Project site as per Enquiry/P.O., the following details (furnished in the P.O. or separately) shall be paint stencilled & hard punched on both ends of the pipes in addition to the above.

1) Work order No 2) Pipe Length (in mtr) 3) DU No
4) Weight per Pipe length 5) KKS Code as per Engineering drawing.

10.3 Any other Marking & Identification which is not mentioned above Sl. No: 9.1 & 9.2 shall be as per Enquiry/P.O.

10.4 Paint or Ink for marking shall not contain any harmful metal or metallic salts such as zinc, lead or copper which cause corrosive attack on heating

11.0 PRESERVATION:

11.1 The pipes if despatched to BHEL Stores shall be coated with resin type translucent rust preventive on the outside unless otherwise specified in the P.O. Thick black coating which camouflages the surface of the pipes is not permitted.

11.2 The pipes if despatched to project site directly shall be painted as following:
Surface preparation: Blast cleaning to Sa 2 1/2
Primer: One coat of Inorganic Zinc Silicate primer; DFT = 70 microns min.
Total DFT = 70 microns min.

11.3 Desiccant material suitable for use in combination with steel (moisture absorbent) shall be placed inside closed pipe to enable corrosion prevention for at least 2 years.

11.4 The ends of pipes shall be covered with plastic caps after ensuring that pipes are cleaned and cleared of extraneous matters.

11.5 Painting and Packing procedure shall be submitted for customer review and approval.

12.0 QUALITY PLAN

Before start of manufacturing, vendor shall submit Manufacturing Quality Plan (MQP) for BHEL and Customer approval. The MQP shall be prepared and submitted in accordance to the Reference Quality Plan enclosed along with Enquiry.

13.0 INSPECTION & CERTIFICATION

13.1 Inspection shall be by BHEL and Customer –as per the Approved Quality Plan.

13.2 ASME Certification mark on the pipes is not mandatory.

13.3 Supplier's Quality System shall meet the requirements of NCA-3800. However, Quality System Certificate (QSC) for material organization from ASME Society (one of the requirement of NCA-3800) is not required.

13.4 Three original test certificates typed in English shall be submitted along with the inspection report. The test certificate shall furnish the following details.

a. BHEL P.O Number & Amendment Number(if any)
b. BHEL P.O. Serial Number
c. Test Certificate number
d. Specification, grade with year of code, size, quantity
e. Steel & Pipe making process
f. Heat number of plate (or pipe number with traceability to heat number)
g. Chemical composition including incidental elements on Ladle & Product analysis
h. Heat Treatment details with actual temperature and soaking time
i. Mechanical properties including Impact test reports etc.
j. Hydrostatic test, Detailed NDT reports with reference norm, acceptance standard and Test results as applicable.
k. Dimensional report
l. Painting details

13.5 Mill test certificate for Raw material (Billet/Bloom/Plate) as per Clause 2.0.

13.6 Videography/Digital Photography carried out during manufacture, examination/ testing, loading/ unloading, shipment etc shall be made available to Purchaser as and when demanded. Same shall be transferred on CD and submitted to BHEL on completion.

Seamless Steel Pipes for Nuclear requirements– ASME SA 335 P22

1.0 GENERAL:

Materials: SA335 P22.

This Technical Delivery Condition specifies the requirements in addition to ASME SA335. The pipes are intended for Nuclear Piping coming under ASME Sec III Sub Section NC.

2.0 BILLET/BLOOM REQUIREMENTS:

The billets/blooms shall be fully killed and vacuum degassed.

Ladle analysis is required for all steels. Chemistry shall be as per applicable material specifications.

The billet/bloom shall conform to the chemical and process requirements of respective pipe specifications.

3.0 CHEMICAL COMPOSITION:

Product analysis on pipes is required for all steels. Chemistry shall be controlled as per applicable material specifications and shall also be reported in the product analysis.

4.0 DIMENSION & TOLERANCES:

a) The dimensional standard shall be as per ANSI B36.10. The tolerances shall be as per SA 335/SA 335M and drawings as mentioned in PO.

b) Length and Quantity Tolerance as per P.O.

c) The pipes shall be supplied shall be with plain ends.

5.0 HEAT TREATMENT & MECHANICAL TESTS:

6.1 HEAT TREATMENT

All sizes – Either in Normalised and tempered or Isothermal Annealed condition.

6.2 Mechanical Test:

a) Mechanical tests as per applicable material specification.

b) Impact test shall be carried out (on min.3 specimens) on pipes of each heat at 15 deg.C and values noted down and record shall be submitted

6.0 SUPPLEMENTARY TESTS:

These are applicable to SA335 P22. The supplementary test results shall be indicated in the Test Certificate along with the mandatory test results.

7.1 PRODUCT ANALYSIS (S1): - Product Analysis for all steels shall be carried out on 5% of pipes per heat per heat treatment batch (minimum 2 Nos) for size NB 200 mm and above.

7.2 TRANSVERSE TENSION TEST (S2): - Transverse tension test shall be carried out (for size NB 200 mm and above) on both ends of 5% of pipes per heat per heat treatment batch (minimum 1 No).

7.3 **Flattening test (S3): -** Flattening test shall be carried out (for size NB 200 mm and above) on both ends of 5% of pipes per heat per heat treatment batch (minimum 1 No).

7.0 NON DESTRUCTIVE TEST:

Each pipe shall be Hydro tested as per ASTM A 530.

8.0 REPAIR:

Repair by welding is prohibited. The pipe shall meet the dimensional tolerance (clause 4.0 above) after any mechanical repair as permitted in the standard.

9.0 WORKMANSHIP:

The Inside & outside surfaces of the pipes shall be free from any imperfections & defects like laps,seams,folds, cracks, pitting etc,. Localised imperfections, if any,may be removed by grinding or skin machining only, ensuring the wall thickness, inside and outside diameter to provide workmanship like finish. Local depressions or ground spots are not acceptable. Loose scales shall be removed by blast cleaning in both inside and outside surface. Repair by welding is prohibited.

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4) Weight per Pipe length 5) KKS Code as per Engineering drawing.

10.3 Any other Marking & Identification which is not mentioned above Sl. No: 9.1 & 9.2 shall be as per Enquiry/P.O.

10.4 Paint or Ink for marking shall not contain any harmful metal or metallic salts such as zinc, lead or copper which cause corrosive attack on heating.

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