Contents

1. Scope

This Appendix describes typical documentation which should normally be produced to assure adherence to the Quality Assessment (QA) system for vacuum items for use in the ITER Project. The contents of this annexure are guidelines, applicable to the relevant areas mentioned below. In case of any discrepancy the content between the guidelines and the specific requirements (other annexures of the specification) for that area, the specific requirements apply.

Suppliers who follow the guidelines contained in this Appendix will provide suitable documentation which will meet the requirements of the ITER Vacuum Handbook.

Other forms of documentation which satisfy these requirements may be accepted.

The requirements mentioned are in this annexure are in addition to the overall product technical requirements, Quality Assurance and Quality Control System.

In any dispute over QA related to vacuum procedures applied to or vacuum performance of any item, the decision of the ITER Vacuum Responsible Officer (RO) will normally be taken as authoritative.

2. Reference Documents

ITER Vacuum handbook: Appendix_19_Documentation_and_QA_2DMNNR_v1_4

3. Areas to which Vacuum QA Applies

3.1 Materials

3.2 Satisfactory procedures for cleaning and processing

3.3 Assessment of cleanliness

3.4 Leak tightness

3.5 Outgassing performance

4. Supplier's QA System

It is to be expected that the supplier will have experience in operating a quality assurance system to the relevant national or international standards, e.g. ISO 9001 or equivalent.

5. Certificates

Except where the ITER Project has issued a specific pro-forma certificate pertaining to any requirement, the supplier should use a suitable certificate of the supplier's devising. Draft versions of such certificates should be submitted for approval before the use. Certification should conform to EN 10204 2.2, 3.1 or 3.2

6. Materials Used

6.1 Information Normally Required Prior to Manufacture

6.1.1 The supplier should supply typical certificates of chemical analysis for each batch of material called in the specifications and/or drawings, based on the supplier's previous experience of such materials. If the supplier has no previous experience of using such materials, a statement of this fact should be supplied.

6.1.2 The supplier should normally supply certificates and/or samples of capability of carrying out welding or other jointing techniques called in the specifications and/or drawings for the materials to be used.

6.2 Normal Post Manufacture Certification

6.2.1 The supplier should issue a certificate that all materials used conform to the specification and/or drawings, drawing attention to any discrepancies.

6.2.2 Unless otherwise specified, certificates of chemical analysis of each batch of material used (e.g. ladle or ingot samples) are normally required.

6.2.3 Forged stainless steels for use on VQC 1A components should be supplied with certificates of inclusion counts conforming to ASTM E-45 method D or equivalent.

7. Cleaning and Processing

7.1 Information Normally Required Prior to Manufacture

7.1.2 The supplier should provide details of the cleaning processes to be used in the form of a job flow check sheet or diagram, together with a list of the chemicals used.

7.1.3 The supplier should provide details of all equipment to be used for cleaning or processing, including sizes, supplier and approximate date of manufacture.

7.1.4 Details of all vacuum pumps and gauges which may be used in any process are to be included. Where any equipment cannot meet the requirements of the specification this must be clearly indicated.

7.1.5 The supplier should provide details of any subcontractor to be used for cleaning and/or processing.

7.2 Normal Post Manufacture Certification

7.2.1 The supplier should deliver a certificate for each item supplied showing compliance with the appropriate specification. This will clearly identify the item and record all significant parameters (e.g. time and temperature) of the major stages of the processes applied and all equipment used.

7.2.2 A non-conformance report should be provided for each item where any deviation from the accepted procedures has occurred.

7.3 Detailed procedure and the requirements pertaining to cleaning shall be as per Annexure 7.

8. Assessment of Cleanliness

8.1 Information Normally Required Prior to Manufacture

8.1.2 The supplier should provide details of the method or methods to be used to assess cleanliness of the items.

8.1.3 The supplier should provide full details of all equipment to be used for assessing cleanliness including specification, supplier and approximate date of manufacture. Details of all vacuum pumps and gauges to be used in any testing are to be included. Where any equipment cannot meet the requirements of the specification this must be clearly indicated.

8.1.4 The supplier should provide details of any subcontractor to be used for assessing cleanliness.

8.2 Normal Post Manufacture Certification

8.2.1 The supplier should deliver a certificate for each item supplied showing compliance with the appropriate specification. This will clearly identify the item and all equipment used. Included will be a record of all significant parameters of the major stages of the procedures used to carry out these tests and calibration certificates for vacuum gauges and gas analysers used. Results of any chemical analyses or residual gas spectra will be supplied in full.

8.2.2 A non-conformance report should be provided for each item where any deviation from the performance specification has occurred.

8.3 Detailed procedure and the requirements pertaining to cleanliness shall be as per Annexure 7.

9. Leak Tightness

9.1 Information Normally Required Prior to Manufacture

9.1.2 The supplier should provide details of the method or methods to be used to leak test the items in accordance with the ITER Vacuum Handbook.

9.1.3 The supplier should provide full details of all equipment to be used for leak testing including specification, supplier and approximate date of manufacture. Details of all

vacuum pumps and gauges, calibrated leak including dates of calibration and validity, to be used are to be included. Where any equipment cannot meet the requirements of the specification this must be clearly indicated.

9.1.5 The supplier should provide details of any subcontractor to be used for leak testing

9.2 Normal Post Manufacture Certification

9.2.1 The supplier should deliver a certificate for each item supplied showing compliance with the appropriate specification. This will clearly identify the item and all equipment used in these tests. Included will be a record of all significant parameters of the major stages of the procedures used and calibration certificates for leak detection equipment and standard leaks used.

9.2.2 A non-conformance report should be provided for each item where any deviation from the performance specification has occurred.

9.2.3 The supplier should report details of all leaks found during the manufacturing phase and details of remedial action taken to minimise the size of any identified leaks.

9.3 Detailed procedure and the requirements pertaining to cleaning shall be as per Annexure 7.