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Supplier Quality Assurance Requirements Manual (SQAR)

Document Approvals:

Name	Title	Signature & Date
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1 Introduction

At Virgin Orbit, we are dedicated to our mission of opening up Space to everyone. Going to Space is not an easy task and we can't do it alone. Our Supplier(s) provide a large proportion of our launch vehicle. As a result, our success depends on developing and maintaining the strongest possible supply base. Our intent, through the Supplier quality process, is to develop long term and mutually beneficial relationships with our Supplier(s) to enable us to be successful in achieving our mission.

1.1 Scope

Requirements in this document are applicable to all purchased parts.

2 Definitions

2.1 Terms

Table 1 - Terms

Term	Definition
Buyer	Virgin Orbit, the procurement entity.
Supplier	The legal entity that is the contracting party with the Buyer with respect to the procurement document.
Buy parts/items	Components, assemblies, and raw materials purchased from outside vendors using Oracle's PO form to support Virgin Orbit programs.
Engineering Bill of Materials	A list of components defined as the final product is designed by the engineering team.
Process Flow Diagram	Document that graphically depicts all steps of the manufacturing process. See SQC5
Procurement document	The PO (P.O.) or subcontract between the parties.
Request for Quote (RFQ)	A request for quote (RFQ) is a solicitation for goods or services in which a Virgin Orbits requests Supplier(s) to submit a price quote and bid on the opportunity to fulfill certain goods or services. Supplier(s) are asked to use Virgin Orbit's standard RFQ template when submitting quotations

2.2 Acronyms

Acronym	Definition
AFSS	Autonomous Flight Safety System
BOM	Bill of Materials
CAR	Corrective Action Request
eBOM	Engineering Bill of Materials
FAI	First Article Inspection

FSH	Flight Safety Hardware
mBOM	Manufacturing Bill of Materials
MDS	Master Demand Schedule
MRP	Materials Requirements Planning
MSA	Measurement System Assessment
PFMEA	Process Failure Modes Effects Analysis
PO	Purchase Order
PQCP	Process Quality Control Plan
RMA	Return Material Authorization
RTV	Return to Vendor
RCCA	Root Cause Corrective Action
SCAR	Supplier Corrective Action Request
SQC	Supplier Quality Clause
SQE	Supplier Quality Engineer
SCAN	Supplier Corrective Action Notification
DR	Deviation Request
FAIR	First Article Inspection Report
VO	Virgin Orbit
WTF	What To Fix (VO name for a nonconformance)
WIP	Work in Process

3 Applicable Documents

3.1 Internal

- QM-10001- Quality Management Systems Manual
- SC-PROC-10014- Supplier Packaging Requirements
- MFG-PS-20015 – Hardware Cleaning Specification

3.2 External

- AS9100/ ISO 9001- Aerospace Standard - Quality Management Systems - Requirements for Aviation, Space and Defense Organizations
- AS9102- Aerospace First Article Inspection Requirement
- TS16949 - Quality management systems - Particular requirements for the application of ISO 9001 for automotive production and relevant service part organizations
- SMC-S-003 - Space and Missile Systems Center Standard - Quality Assurance for Space and Launch Vehicles
- AS5553 - Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
- MIL-STD-1686 - Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment
- ANSI-S20.20 - Parts, Electrical and Electronic, Assemblies and Equipment, Protection, for the Development of an Electrostatic Discharge Control Program
- EIA 625 - Requirements for Handling Electrostatic Discharge Sensitive Devices
- ISO 28219 - Packaging - Labelling and direct product marking with linear bar code and two-dimensional symbols.
- IEST-STD-CC1246E: Product Cleanliness Levels – Applications, Requirements, and Determination
- ISO 17025- General Requirements for the Competence of Testing and Calibration Laboratories

4 Supplier Quality Policy

Our Supplier Quality Policy is a combination of the following significant factors:

A Drive to ***Safety and Zero Defects***

- Virgin Orbit along with their Suppliers will commit to maintaining the highest standards of Product and Work Place Safety.
- Commitment to ship defect free product.

Quality System based on ***Prevention of Defects***

- Emphasis will be on the prevention of defects throughout the Supply Chain as our primary method of ensuring quality.

Open and ***Honest Communication***

- Our Supplier will share all contributing factors that impact Product Quality and Reliability.

Accountability

- We expect our Supplier(s) to be accountable for all factors that impact our products.

Continuous Improvement

- Virgin Orbit and its Supplier(s) will share a desire to learn and have a commitment to continuous improvement in all aspects of the business.

In turn, Virgin Orbit will deal honestly with our Supplier(s), strive to listen to our Supplier(s) concerns, communicate our requirements. We look forward to mutually beneficial, long term relationships with our Supplier(s).

5 Quality System Requirements

This Supplier Quality Assurance Requirements (SQAR) Manual provides guidance, including Supplier restrictions and quality system requirements applicable when goods and services are procured by Virgin Orbit. The name Virgin Orbit, VO and Buyer could be used interchangeably, but implies the same thing throughout this document.

We recognize that there are multiple relevant worldwide business system standards and certifications such as AS9100, TS16949, ISO 9001, and SMC-S-003. Virgin Orbit may request the Supplier to provide evidence of their Quality Certification or compliance to QMS requirements in the form of Supplier Quality Manual. If the Supplier is not certified by an International Organization then Virgin Orbit expects the Supplier and sub tier Supplier(s) to maintain compliance to a quality management system (QMS) which complies with International Organization for Standardization in the following areas, at minimum:

5.1 Process to Identify and Review Product Requirements

5.1.1 Perform thorough review of this document and the requirements called out on the PO and Drawing.

5.1.2 Understand special requirements such as VO manufacturing process requirements stated on the Drawing or PO such as PS-00025 and how the product will be used.

5.1.3 Review requirements, maintain records of reviews and appropriate documentation.

5.2 Control Changes in Product Requirements

5.2.1 An established engineering change management (including hardware and software).

5.3 Process and Product Monitoring and Measurement

5.3.1 When required, the use of a Process Quality Control Plan (PQCP) to monitor characteristics of the process and product to ensure that all requirements will be met.

5.3.2 Records that prove conformity, or appropriate steps to address non-conforming processes or product.

5.4 Operator Training

5.4.1 Documentation that proves operators are trained to do the jobs that they perform, and can identify non-conforming product.

5.5 Production Control

5.5.1 Document scheduling process to ensure product will be delivered on time.

5.6 Protection of Property and Product

5.6.1 Due care with regard to storage and processes, and appropriate packaging that prevents: contamination, Foreign Object Debris, (FOD), spoiling, shelf life expiration, and or damage to the product (including consigned material).

5.7 First Article Inspection (FAI)

5.7.1 First Article Inspection shall be performed on parts in accordance with AS9102 when an FAI requirement is flowed down to Supplier via Virgin Orbit PO.

5.8 Calibration of Measuring Devices

5.8.1 Calibration of all measuring devices shall be performed in compliance with ISO 17025.

5.9 Control of Non-Conforming Product

5.9.1 Procedure that defines the process, personnel, and responsibilities for dealing with non-conforming product.

5.9.2 Ensures that non-conforming product is identified and contained to prevent further use.

5.9.3 Including records of non-conformances and steps to address them.

5.10 Root Cause and Corrective Action (RCCA) Process

5.10.1 Review of all non-conforming processes or product, including disposition and responses to Supplier submitted Deviation Requests.

5.10.2 Root cause analysis, implementation and verification of corrective action.

5.11 Tracking and Improvement of Critical Dimensions and Key Performance Indicators (KPI's)

5.11.1 Identification, tracking, inspection and improvement plans for critical dimensions and KPI's.

5.11.2 Willingness to share data and plans.

6 Virgin Orbit Supply Chain Website

Virgin Orbit maintains a website for Supply Chain that contains valuable information including Supplier Quality requirements and Virgin Orbit specifications. It is the Supplier's responsibility that they adhere to the current revision of the documents and forms that are available on the Virgin Orbit Supply Chain website. Supplier can use their own procedures and forms if they prefer, but the Supplier internal procedure and forms at a minimum need to adhere to the requirements stated on the VO Purchase Order/SOW/Contract.

The Virgin Orbit Supply Chain Web address is https://virginorbit.com/supplychain.

This website includes information about Supplier Quality Requirements.

7 General Requirements

7.1 These general requirements shall apply to existing and potential Supplier(s) whenever this is incorporated into the requirements of a PO. Other variable requirements specific to the PO shall be identified as additional quality and process requirements with the applicable Supplier Quality Clause (SQC) and are incorporated by reference when specified on the quote and/or order. All Supplier(s) and their sub-tier Supplier(s) will be held responsible to the Supplier quality requirements stated in this procedure as they would apply to the commodity or service which is being provided to Virgin Orbit by the Supplier. It is the Supplier's responsibility to flow the requirements of this document as they apply to sub-tier Supplier(s) who are considered a part of the Virgin Orbit Supply Chain.

7.2 Revision status of procured/deliverable items shall always be as specified in the PO. If the PO conflicts with the requirements of this document, the PO requirement will supersede this document. Applicable revision status of specifications shall be the revision in effect on the date of the PO unless specified in the PO or related documents. If a change to specifications happen when a PO is executed by the Supplier, then the Supplier will be contacted by a VO Supply Chain Representative to discuss impact of specification change and establish next steps.

7.3 Virgin Orbit encourages Supplier(s) providing a RFQ response to review all requirements (Design, specification, clauses, etc.) provided with the RFQ and clearly indicate during submission of quotes if an exception is being taken to any aspect of the RFQ package. This will allow Virgin Orbit and Supplier(s) to engage in exception discussion during the quoting process which in turn will help streamline product manufacturing and receipt by minimizing delays due to processing of deviation requests and disposition during the time of shipment.

7.4 The drawing and referenced documents will contain the requirements for parts shipped by Supplier(s). However, the Buyer may impose additional requirements via Quality Clauses listed on the PO. Compliance with Quality Clauses shall be required if the Quality Clause number is listed on the PO line item. The Supplier Quality Clause description can be found in Appendix A of this document.

7.5 The requirements of Virgin Orbit PO, including applicable drawings (specific drawing notes and annotations), specifications and statements of work (SOW) supersede workmanship specifications and standards of the Supplier including those specifications and standards represented as "Industry Standards." If the Supplier believes a drawing contradiction exists, the Supplier is obligated to procure a clarification/Deviation via written correspondence to Virgin Orbit. The clarification shall be issued by Virgin Orbit in writing through a drawing revision, PO amendment, Material Review Board (MRB) disposition, and/or Deviation Request. The information on the PO is binding. If Supplier accepts any direction that is not explicitly stated in the PO or other contractually binding document, they does so at Supplier's own risk and may impact acceptance of the parts or services against the PO.

7.6 The use of any method that causes the original data on documents to be obliterated and unreadable (i.e. the use of correction fluids, correction tape, write-over, or other methods) to correct, modify or otherwise alter the data and/or entries on any certifications, test reports or other documents required by the PO, is strictly prohibited. Corrections may be made on inspection reports providing it is clearly obvious that a correction was made and it is signed, initialed, or stamped by an authorized individual. Upon receipt at Virgin Orbit. Products or services represented by documents that show evidence that they have been corrected or altered in an unauthorized manner will be subjected to RTV.

7.7 While communicating/sharing design, quality and process critical information/documents with VO, the Supplier will use the VO secure site "RELAY" to send information to the Buyer and applicable VO representatives. Supplier can request access to Relay by reaching out to their assigned Buyer procurement representative.

8 Supplier Approval

To ensure all Suppliers can meet VO requirements, VO may perform an assessment of the Supplier manufacturing capabilities whenever deemed practical and appropriate. The assessment may be conducted at the Supplier's facility by a representative of VO or it may be conducted remotely by VO requesting specific information from the Supplier. The Supplier may be asked to conduct the assessment themselves and communicate the results with the Buyer. The areas of the Supplier(s) business to be assessed will include the following:

1) Quality System

a. Organizational chart, roles and responsibilities, demonstrated quality system, evaluation of quality system effectiveness, etc.

2) Manufacturing Capabilities
   a. 6S, FOD prevention standard work, quality processes, measuring devices, maintenance, materials management, sub-Supplier management, etc.
3) Engineering Capabilities
   a. Engineering resources, CAD capabilities, configuration management, engineering change procedure, test capabilities, etc.
4) Manufacturing Processes
   a. Machining, extrusion, anodizing, casting, plating, composites, electronics, wiring harnesses, assembly, etc.
5) Financial and completeness of required forms
   a. Supplier's overall financial health. Specifically, when critical Goods or Services are contemplated, a full Dun & Bradstreet report to assess credit rating/risk.
   b. Due diligence search performed including export/import compliance search utilizing OCR Global Trade Management software for domestic and foreign Suppliers. Additionally, denied and debarred exclusion search on System for Award Management (sam.gov)
   c. Completeness of VO Onboarding Package
      - Supplier Profile form completed with all fields populated
      - Supplier reviewed and signed VO Non-Disclosure Agreement when applicable
      - Supplier confirmed review and acceptance of VO terms and conditions
      - Supplier confirmed review and acceptance of VO Supplier Quality and Hardware Cleaning Requirements
      - Suppliers provided current W-9 or W-8BEN form
      - Supplier completed Export Control Certification when applicable
      - Appropriate tax exemption notes have been set up

The Supplier, as the recipient of the PO, is responsible for meeting all specified technical and quality requirements, whether the Supplier performs the work or the work is performed by the Supplier's sub-tier sources.

9 Sub-Tier Supplier Management

9.1 Procedure

Supplier is expected to have a procedure for managing their Supplier(s). This procedure should ensure that the following quality system procedures in place at the sub-tier supplier, at a minimum: Control of design changes, material traceability, documented system of inspections, and control of non-conforming material. We also expect our Supplier(s) to evaluate and assist in the improvement of their sub-tier Supplier(s) quality, delivery performance, and cost management. Buyer reserves the right to evaluate its Supplier(s) and their sub-tiers. If the Buyer elects to do this, it may require access to applicable manufacturing records.

9.2 Flow Down of Requirements

When the Supplier uses sub-tier sources for components or to perform work on products and/or services scheduled for delivery to Virgin Orbit, the Supplier shall flow-down process and quality requirements (called out on the print, in technical specifications, and on the PO), to sub-tier Supplier(s) to ensure that all the Buyer requirements are met throughout the supply base.

Note: It is the supplier's responsibility to maintain 3-way NDA's with Sub-Tier Supplier prior to sharing VO proprietary information.

9.3 Sub-Tier Supplier Paperwork

Sub-tier supplier shall provide evidence of compliance to VO requirements in form of document certificates showing that the requirement has been met. Supplier will ensure that they include these documents as a part of their shipping paperwork.

10 Process Review

10.1 Virgin Orbit may perform periodic process reviews at Supplier(s) and Sub-Tier Supplier(s) facility based on risk, which Supplier agrees to support, without cost to Buyer. Such reviews shall be scheduled in advance on a non-interference basis. The purpose of a process review is to determine the suitability, adequacy, effectiveness and consistency of the Supplier's processes to meet contractual requirements, mitigate risks and to provide a basis of confidence for product/service acceptance. Process reviews address the five key elements of a process (4M+E) necessary to produce the product.

1. Manpower (training, skills, personnel changes, certifications)
2. Material (correct materials, shelf life, nonconformance control)
3. Methods (appropriate inspection points, work instructions, routings, records, corrective actions)
4. Machinery (tools, fixtures, calibration)
5. Environment (temperature, lighting, safety, security)

If a review is conducted, the Supplier and their sub-tier Supplier (as applicable) shall have available, and will present upon request, manufacturing and quality records relevant to items on the order.

11 Nonconforming Material

11.1 Definition and Requirement

Nonconforming product is defined as any product that fails to meet the requirements of the Virgin Orbit engineering drawing, specification, PO or other approved product description, including products (such as products under the Supplier's proprietary design control) which fail to meet requirements established and controlled by the Supplier or the Supplier's sub-tier sources.

Virgin Orbit is under no obligation to accept nonconforming product from Suppliers. Approval to ship product that deviates from requirements will be granted (or denied) by Virgin Orbit and its Customer (if applicable) through a Virgin Orbit internal review.

If the Supplier becomes aware of a shipment of nonconforming product, or discovers nonconforming consigned material, they shall contact the Buyer's Procurement Representative and Supplier Quality Representative immediately.

11.2 Handling

At Supplier: Nonconforming material shall be identified, documented, evaluated, segregated and dispositioned to prevent its unintended use. Supplier may request disposition of nonconforming product identified at Supplier or Sub-Tier Supplier location in the form of Deviation Request. Refer to Section 12 for additional information.

At Virgin Orbit: Nonconforming material shall be identified, documented, evaluated, segregated and dispositioned to prevent its unintended use. Nonconforming product will be documented on a WTF ticket and will be placed in a Quality Hold location for further review and disposition.

11.3 Disposition

Unless otherwise stated in the Order, the Supplier is authorized to conduct limited Material Review and disposition of nonconforming products identified by the Supplier using the following disposition alternatives:

Table 1 – Disposition Types and Deviation Requirement

End Condition	Disposition Type	Description	Requires Virgin Orbit Deviation?
Meets Print	REWORK TO PRINT	The disposition will provide the necessary modifications to bring the hardware to a state where it fully satisfies all drawing, and/or specification requirements	No
	RETURN TO VENDOR	Hardware does not meet requirements and will be returned to the sub-tier supplier to be reworked or replaced	No
Deviates from Print	REPAIR	The disposition will provide the necessary modifications to bring the hardware to a state where it will be acceptable for use, but does NOT satisfy all drawing and/or specification requirements	***Yes***
	USE AS IS	Hardware does not satisfy all drawing, work order and specification requirements, but is acceptable for use	***Yes***

The Supplier's Material Review and nonconforming product disposition records, as well as the Material Review records at the Supplier's sub-tier sources are subject to on-site verification by Virgin Orbit to ensure that the Supplier follows these requirements.

The Supplier shall propose and formally request a *USE AS IS* or *REPAIR* disposition by submitting a Deviation request to VO (See Section 12 of this document for more details). The Supplier shall not repair or ship to Virgin Orbit any nonconforming products prior to Virgin Orbit Deviation Request approval. If non-conforming product is received at VO prior to disposition by VO authorized representatives, then the non-conforming product may be subject to RTV.

When Virgin Orbit dispositioned products are delivered to Virgin Orbit, the Supplier shall reference on the packing list/shipper and Certificate of Conformance the Virgin Orbit disposition document number (WTF ticket #). If dispositioned product is packaged in the same box as conforming product, then dispositioned product shall be segregated and marked or tagged so as to permit easy identification upon receipt at Virgin Orbit.

When a nonconformance on a Supplier manufactured product is identified at VO and it is dispositioned as RTV, then a designated VO Representative will request a Return Material Authorization (RMA) number from the supplier prior to conducting non-conforming hardware RTV.
When Supplier returns to VO conforming hardware after performing rework then they will state the WTF number on the box and CoC.

11.4 Certificate of Destruction

If a Supplier needs to scrap any finished product manufactured at the Supplier or the sub-tier Supplier site, then it is the responsibility of Supplier to destroy and scrap the product (in order to avoid future use of scrap product) and submit a *Certificate of Destruction* to Virgin Orbit, along with objective evidence (i.e. pictures, etc.) of the destruction of product and also apply a red indication on the product before scrapping/discarding it.

The *Certificate of Destruction* shall include critical information about the part being scrapped (depending on the drawing requirements) such as WTF number (if applicable), serial / lot number, part number, part name, purchase order number and date of scrap.

11.5 Supplier Corrective Action Request (SCAR)

Notification of non-conformance will be sent to Supplier(s) through Supplier Correction Action Request (SCAR) response.

A SCAR is issued to a Supplier when a non-conformance is found on a Supplier provided product at Virgin Orbit. Upon notification, the Supplier shall perform internal Root Cause Corrective Action (RCCA) investigation to resolve issue related to the non-conformance prior to making subsequent shipments to Virgin Orbit.

A SCAR will be generated in the form of a ticket which will contain information about the observed non-conformance and SCAR number listed as stated in the box above. SCAR number

will be noted as "SCAR-XXXXX", where XXXXX is the non-conformance ticket number. The Supplier will reference this SCAR number on the RCCA form for traceability with ticket.

NOTE: Suppliers and Sub-Tier Suppliers may be requested by a VO representative to provide details and copy of documentation associated with their RCCA investigation of non-conformance.

11.6 Root Cause and Corrective Action Management

The supplier shall have a functioning system for closed loop corrective action. It is Supplier responsibility to execute Root Cause Corrective Action at their manufacturing site or sub-tier Supplier (as applicable). The supplier can choose to use their internal corrective action form or use Virgin Orbit RCCA template which can be found on the Virgin Orbit Supply Chain website. In case the Supplier chooses to use their own internal corrective action form, then the form needs to comply (at a minimum) with the requirements stated on Virgin Orbit RCCA form.

In order to complete initial response and corrective actions, the Supplier shall:

1) Within one(1) business day, respond to the following:
    a. Acknowledgement of the issue, and comment on the Problem Description.
    b. Provide a Return Material Authorization Number, Shipper Name, and any other shipping information required to return the material to the Supplier (if Buyer requests that the material is to be returned).
    c. Supplier is responsible for paying for the shipment.
    d. Provide immediate action and response that identify and quarantine any affected WIP that is in production associated with the non-conformance notification.
2) Within ten (10) business days, the Supplier shall provide a corrective action plan that is acceptable to the Buyer. All steps taken from root cause to corrective action verification shall be documented on the SCAR, including the following, at a minimum:
    a. Identification and Verification of the root cause of the problem
    b. Identification and Implementation Plan for the Corrective Action(s)
    c. Validation Plan for the Corrective Action(s)
3) If reworking or replacing discrepant material, the Supplier shall provide the RMA, SCAR, and Non-Conformance ticket numbers on the Certificate of Conformance when shipping the material to the Buyer.
4) If the disposition of the material is for the Supplier to sort it at the Buyer's facility:
    a. Provide a representative to perform sorting of all parts at the Buyer's facility, at their cost. The representative shall have familiarity with the product and the ability to communicate with the Supplier plant for containment and corrective actions.
    b. The Supplier's measuring devices shall have proof of calibration.
    c. The Supplier shall identify all sorted material to show either "Accepted" or "Rejected" and label each container with part number, quantity, and date.

If the number stated in the SCAR/Deviation Number box starts with "RTV-XXXXX" OR "SCAN-XXXXX", then the Supplier shall implement corrective actions, but not provide a response.

Supplier is expected to retain a copy on file and will provide a copy of RCCA when requested by Virgin Orbit.

Regardless of the disposition of non-conforming material, the Supplier will be responsible for a complete response to the corrective action request.

11.7 Third Party Certification

If the Buyer discovers another identical defect prior to the implementation of a corrective action, the Supplier may be required to implement third party certification of shipments with no additional cost or schedule changes to the Buyer.

12 Request for Deviation from Requirements

12.1 Situations Where a Deviation May Apply

A. The Supplier can request a deviation that would allow them to ship product that does not meet purchase order, specification or drawing requirements, on a limited basis:
   1) Supplier manufactures product out of specification (such as not meeting print tolerances, or technical specifications, or PO requirements), but believes there are no negative effects.
   2) Supplier has not completed, but believes the inadequacies will have no negative effects.

B. Buyer Requests to Deviate from Requirements:
   1) The Buyer may request that the Supplier deviates from requirements. In this case, the VO Supplier Quality Engineer will provide a completed Deviation Request form instructing the Supplier what deviation(s) shall apply to the PO.

12.2 How to Request a Deviation

1) Fill out the VO Deviation Request Form, found in VO's website: https://virginorbit.com/supplychain, and forward it to the VO Supplier Quality and Procurement Representative for approval.
2) The VO SQE will review the request with VO's engineering department and determine the appropriate disposition and rationale.
3) Do not ship the parts until a signed deviation request has been received from the Buyer.

12.3 Deviation Disposition and Response

1) If the deviation is approved (USE AS IS):
   a. The VO SQE will provide the approved copy to the Supplier. This authorizes the Supplier to ship material on a limited basis and applies only to the line item and PO stated on the deviation request.
   b. The Supplier shall include a copy of the approved form with all associated shipments and state the Deviation response ticket number on the Certificate of Conformance. If the deviation references multiple part numbers, the Supplier shall include a copy of the deviation with each part number.
   c. Applicable documents such as inspection data and serialization shall be retained.

2) If the deviation is rejected (REWORK, REPLACE OR SCRAP):

a. The VO SQE will provide the dispositioned copy to the Supplier. Supplier will correct the discrepancy and provide documentation proving that it has been corrected, prior to shipment OR
b. Complete, provide, and receive approval for all documentation, prior to shipment.
c. If the requirements listed above in item a. and b. are not met, the shipment may be subject to RTV.
   NOTE: If an Item is at a finished state and needs to be scrapped at the Supplier, then the Supplier will follow instructions stated in Section 11.4 (Certificate of Destruction) of this document.

The acceptance of nonconforming parts by Virgin Orbit and its Customer establishes no precedent for the continued acceptance of parts in similar condition. Deviation disposition only applies to parts shipped against the PO line number and/or manufacturing lot/serial number which is referenced on the Deviation Request and should not be considered as approval for any future shipments.

NOTE: The Supplier must use the process above to request a deviation. Verbal or email requests are not acceptable. Parts received without VO authorized deviation request form may be considered unacceptable and returned back to Supplier with no cost to Buyer.

13 Design and Product Changes (Change to Form, Fit or Function)

Under no circumstance is the Supplier allowed to change the design, or Bill of Materials (BOM) of a product, without prior written approval from VO (after a PO has been placed) (i.e. change to form, fit or function of the component/assembly). If the Supplier finds a design or BOM change necessary, the Supplier shall request the change by completing the VO Supplier Design Change Request (SDCR) form and providing it to VO's Procurement Representative. If approved, the Supplier may proceed with the change after receiving written authorization from VO.

The Supplier's change control system shall assure that current revision of applicable drawings, specifications (Virgin Orbit or Industry), technical requirements, order information and changes will be put in place prior to execution of work order at the Supplier (s) manufacturing site, thereto will be available at the time and place of acceptance of material and/or services.

Supplier or VO owned tooling shall assure that current revision of applicable drawings, specifications (Virgin Orbit or Industry), technical requirements, order information and changes will be put in place prior to execution of work order at the Supplier (s) manufacturing site, thereto will be available at the time and place of acceptance of material and/or services.

VO reserves the right to test the changed hardware in its system or by using simulators to verify the compatibility of changed hardware prior to accepting said hardware or changes. This includes full re-qualification if necessary.

14 Testing and Validation of Results

Supplier will conduct validation testing as mentioned in the drawing; and any referenced Industry and VO specification (Specification stated in Section 6 above) on the drawing and/or PO. Supplier will provide a copy of the validation test results with every shipment to Virgin Orbit.

For these product families, the Supplier shall perform inspection and functional testing on each unit, which shall meet the following minimum requirements, as appropriate:

14.1 Printed Circuit Board Assemblies and Electronic Devices

The Supplier shall conduct the following inspections and tests, and meet IPC-6011, Class 3:

A. Coupon analysis (bare boards).
B. Automatic optical inspection.
C. Electrical tests for circuit continuity.

If the product contains software, the Supplier shall also conduct a functional test that ensures that the product meets specifications.

14.2 Electromechanical Devices

The Supplier shall conduct testing that ensures:

A. The product functions within its full, specified range of motion.
B. The product moves from one end of its operation to the other in the specified amount of time (both directions).
C. Any parts that spin are balanced within specification.
D. Electrical inputs over the Buyer defined range yield results that conform to the print and technical specifications over the full range of motion.
E. Outputs based on position yield conforming electrical values.

14.3 Wiring Harnesses

Wiring harness shall be built and tested to NASA-STD-8739.4. The Supplier shall conduct and provide results for the following tests:

A. Continuity.
B. Hi-Pot testing.
C. Insulation resistance.

14.4 Pneumatic and Hydro mechanical Devices

The Supplier shall conduct testing that ensures:

A. The product functions within its full, specified range of motion.
B. The product moves from one end of its operation to the other in the specified amount of time (both directions).
C. Hydraulic pressure input over the Buyer defined range yields results that conform to the print and technical specifications over the full range of motion.
D. Output load conforms to VO requirements.

14.5 Mechanical Devices

The Supplier shall conduct testing that ensures:

A. The product functions within its full, specified range of motion.
B. The product moves from one end of its operation to the other in the specified amount of time (both directions).
C. Any parts that spin are balanced within specification.
D. Mechanical inputs over the Buyer defined range yield results that conform with the print.
E. Devices that will be pressurized or hold fluids are leak tested.

15 Calibration System

Supplier test and measurement equipment services shall have a calibration system in compliance with ISO 17025. Calibration procedures must be maintained which provide sufficient information for periodic calibration of inspection, measuring, and test equipment (IM&TE).

Virgin Orbit owned measurement equipment and tools will be appropriately tagged and managed via the Supplier internal asset/tool management system which should include (but not limited to) calibration of assets as needed.

16 Product Obsolescence

If the Supplier decides to obsolete a product, the Buyer shall be provided advanced notification of at least 120 days to allow adequate time for configuration changes and testing, if needed. In addition, the Supplier shall provide a plan to ensure seamless continuity with the new version:

1) Projected date of last shipment, along with the quantity.
2) Plan to build bank of parts to satisfy Buyer requirements until new version is ready.
3) Provide adequate quantities of the new version to the Buyer for evaluation and testing.
4) Conduct FAI for the new version.

When alternate parts are being considered, parts shall be selected from alternate sources, which are form, fit, and function replacements and meet the same quality, reliability, and selection criteria as the original parts.

Note: that form-fit-function alternate parts that require modification require Virgin Orbit approval.

When end-of-life buys are being considered, the Supplier shall formally notify Virgin Orbit of its intent and the lifetime buy requirement shall be negotiated and approved by Virgin Orbit. The Supplier shall provide a written notification to Virgin Orbit of end-of-life product at least 120 days in advance so that proper analysis can be done to identify alternate part or to make a decision for life time buy.

17 Record Retention

The Supplier shall retain quality records for seven (7) years after the last delivery of products, unless otherwise specified on the purchase agreement or order. Prior to discarding, transferring to another organization, or destruction, the Supplier shall notify Buyer purchasing in writing (at least 30 days' notice) and give the Buyer the opportunity to gain possession. Upon request, the Supplier shall deliver requested records to the Buyer within two (2) business days from time of request.

18 Shelf Life Material

When the supplier deals with limited shelf life materials subject to degradation or deterioration over time, the supplier shall establish a shelf life and storage control program to ensure that materials have a minimum remaining shelf life of 80% at the time of delivery to VO, unless otherwise authorized by the buyer or designee. Such a program shall include policies and procedures for:

1) Identifying all items (contained in the Bill of Material (BOM) of product to be delivered to Virgin Orbit) that have shelf life limitations and/or special storage requirements.
2) A receiving inspection process that can ensure that all incoming products are within their shelf life limitation period.
3) A process for physically identifying, labeling, or coding each item so that its shelf life can be readily determined and stating that the item is under shelf life control.
4) A procedure(s) for reviewing (auditing) the status of all items under shelf life controls both in stock and previously issued items/products.
5) Identifying and tracking repackaged consumables. This should include all appropriate information, such as part number, lot number, receiving information (for tracking), date opened, and expiration date. Note: Repackaged consumables with shelf life/storage condition requirements, on which the status cannot be verified, should be properly disposed of.

19 Material Traceability

19.1 Responsibilities

The Supplier shall be responsible for creating and maintaining controlled documentation of product material traceability throughout all stages of receipt, production, and delivery. Traceability records shall be maintained throughout the life of the product, and shall be made available to the Buyer upon request.

The Supplier shall maintain manufacturing records that indicate traceability of any unit shipped against the PO including, but not limited to, serial/lot number, manufacturing date, raw material, processing certifications, etc.

19.2 Raw Materials

Raw materials shall be traceable to the original material manufacturing lot. All raw material shipped to VO that fulfills a PO individual line item shall be from the same heat lot. The material heat number shall be stated on the CoC provided with the shipment.

19.3 Critical Components

Critical components are defined by VO as components that require a frozen manufacturing process prior to start of manufacturing. The requirement of having a frozen manufacturing process is accomplished by having a Process Flow Diagram and Control Plan which has been approved by VO and Supplier, prior to start of manufacturing. VO will notify the Supplier of a Process Flow Diagram and frozen Control Plan requirement in the form of a Supplier Quality Clause (Process Flow Diagram – SQC05 and Process and Quality Control Plan - SQC07) on the PO.

The Supplier shall create a Control Plan document which shall include manufacturing process information, critical process and inspection characteristics and method of inspection. This document shall be designated a document number and revision, and will be approved by both VO and Supplier Representative. Supplier shall not make any changes to an Approved document without prior approval from VO in writing. Supplier may use the control plan template that is available on the VO website. Supplier is authorized to use their own form. This form should include at a minimum (but not limited to) all items listed above. Supplier shall include the Approved document number and revision on the CoC provided by the shipment and also reference the document number and revision on Supplier and Sub-Tier manufacturing routers/work instructions.

For critical components, processing information shall be traceable to purchased components. At a minimum, this includes the operator, date performed, shift, manufacturing instructions used, use of validated equipment, identification of equipment used, BOM / design revision and configuration, resolution of any discrepancies, and record of any rework performed.

19.4 Proof of Traceability

The Supplier shall create and retain a document (in-house) that shows the traceability of the parts delivered on the PO per the table below:

Table 2 – Traceability Data requirements

Condition	Required level of Traceability	Data to be tracked
The drawing does not have a Parts List/Bill of Material or subassemblies	To the raw material used for the part	Source, lot number or equivalent, and date received
The drawing does have a Parts List/Bill of Material or sub-assemblies.	For each item on the Parts List/Bill of Material	Source, lot number or equivalent, and date received
	For the sub-assemblies to items on the Parts List/Bill of Material	No data is required to be submitted. Data to be available on request.

NOTE:

- The Supplier should always be able to provide traceability of the finished parts to lot numbers, raw material, and test data as appropriate when requested by the Buyer.
- When SQC3 is stated on the Buyer PO, then Supplier has to provide Proof of Traceability with every shipment.
- The Supplier will also ensure that complete traceability is mentioned throughout the Supply Chain of product and when a CoC is provide to Virgin Orbit that the part number and revision mentioned on the CoC is same as part number and revision stated on the PO and Virgin Orbit drawing (if applicable).

19.5 Serial and Lot Number

The number shall comply with requirements as called out on the drawing (if specified). If permanent numbers cannot be applied to the parts (as stated on the drawing) then the Supplier shall request an alternate marking technique by submitting a Deviation Request.

If the part is Supplier designed and no requirements for the number format is called out on the drawing, then serial number shall be as assigned by the Buyer and communicated to the Supplier OR the Supplier can generate their internal numbering scheme and communicate to Virgin Orbit.

19.5.1 Serial Number

1) The serial number shall be unique for each unit of the same part number.
2) If the part is VO designed then the serial number nomenclature needs to be VO-XXXX-YYYY. XXXX is the Supplier Code listed on the VO Purchase Order and YYYY is an ***Incremental Sequential Number*** that cannot be duplicated within the same part number.

19.5.2 Lot Number

1) The lot number shall be unique for each manufacturing lot of the specific part number.
2) If the part is VO designed then the lot number nomenclature needs to be VO-XXXX-Supplier Lot Number. XXXX is the Supplier Code listed on the VO Purchase Order. Supplier Lot number is a unique ***Incremental Number*** that cannot be duplicated after a manufacturing work order has been closed.

The Supplier shall record the number on all test reports, inspection reports and other applicable documentation. The Supplier will also reference the number(s) on the Certificate of Conformance to ensure complete part traceability.

NOTE: Once a number is applied to a part, it must NOT be removed or altered without written instructions to do so from the Buyer. The number sequence will be managed and maintained by the Supplier. The Supplier will ensure that the number or sequence is unique to each part and is not duplicated or repeated.

20 Measurement and Inspection

20.1 Dimensional Inspection

When SQC8 is stated on the PO, Supplier shall perform inspection of critical dimensions associated with the drawing and provide dimensional inspection results with every shipment.

20.2 First Article Inspection (FAI)

1) FAI is required when SQC20 is stated on the VO Purchase Order.
2) Supplier shall perform First Article Inspection in accordance with AS9102.
3) In addition to the top assembly, subassemblies that are part of the top assembly shall be included in the FAI Report (FAIR).
4) Supplier shall provide a copy of the FAI package with the shipping paperwork.

20.3 Thread Measurement and Inspection

The Supplier shall manufacture and inspect threads in accordance to Industry standard specifications stated on the part drawing. The Supplier ***shall ensure*** during inspection that ***ALL*** specification and parameters identified on the drawing and industry standard specification are measured.

NOTE: If thread gauges are used, then Supplier will ensure that features per the standard that cannot be measured through a thread gauge are measured with other measurement techniques to validate that all thread specifications have been validated.

20.4 Source Inspection

VO may flow down to Supplier via Purchase Order SQC 22 to perform source inspection at the Supplier or Sub-Tier location. Source inspection could be either gated or final source inspection. Requirements for source inspections will be confirmed and frozen at the time of RFQ and/or PO.

Gated source inspection: Inspection that may be requested at various stages of the manufacturing process at the supplier or sub-tier.

Final source inspection: Inspection that may be requested prior to shipment of product by Supplier or Sub-Tier.

A source inspection may be conducted by a VO representative or a VO approved third party representative. It will be Supplier responsibility to notify Virgin Orbit at least 5 days prior to date of inspection, to allow adequate time for making travel arrangements.

21 Cleaning and Packaging

21.1 Cleaning

Parts will be cleaned in accordance with cleaning requirements referenced on the VO and Supplier drawing or current revision of VO specification MFG-PS-00025, when referenced on the drawing or stated on the PO as a Supplier Quality Clause (SQC23) or both.

When MFG-PS-00025 Virgin Orbit cleaning specification is referenced on the drawing, the supplier shall handle, clean and package the parts in accordance with MFG-PS-00025 cleaning specification and type stated on the drawing. The supplier will state on the Certificate of Conformance (CoC), in the notes section “PARTS HAVE BEEN CLEANED AND PACKAGED USING MFG-PS-00025 TYPE X”, where “X” is the cleaning type as stated on the drawing.

When a cleanliness level to IEST-STD-CC1246E is referenced on the drawing, the supplier will provide documentation of cleanliness testing per IEST-STD-CC1246E. Parts shall be packaged per the drawing notes or other applicable VO documents to maintain cleanliness. The supplier will state on the Certificate of Conformance (CoC), in the notes section “PARTS HAVE BEEN TESTED TO IEST-STD-CC1246E LEVEL X”, where “X” is the cleanliness level as stated on the drawing.

In case a cleaning spec is not referenced on the drawing, then parts should be cleaned to acceptable industry standards, as applicable. All parts shall be visibly clean, free of oil and debris.

If a Supplier chooses to take an exception to the cleaning specification MFG-PS-00025 or verification stated in MFG-PS-00025 and/or IEST-STD CC1246 when it is referenced on the drawing, then they are expected to do so during the RFQ stage OR before shipping finished product, and should receive written authorization from VO to deviate from the specification.

Supplier will ensure that they are following the current revision of MFG PS-00025 at the time of shipment which can be found on the Virgin Orbit Supply Chain website.

21.2 Packaging

Parts shall be packaged in accordance to current revision of VO Supplier Packaging Requirement (SC-PROC-10014). This specification can be found on the VO Supply Chain website.

NOTE: If a Supplier fails to adhere to the requirements stated in SC-PROC-10014, VO may choose to return product back to Supplier for Rework.

22 Certificate of Conformance (CoC)

A copy of the Virgin Orbit CoC and work instructions on how to fill the VO CoC form can be found on the Virgin Orbit Supply Chain website. The supplier is responsible for working to the latest revision of this document.

Supplier can choose to use their internal CoC form, but need to ensure that Supplier CoC template contains at a minimum all the product specific items stated on the Virgin Orbit CoC template.

23 Special Processes

The supplier shall provide process certifications for identifying the specification and revision level of the specification for which parts are processed to. Processes shall adhere to the latest revision of the specification listed on the drawing or purchase order, unless otherwise identified on the purchase order.

Special processes include, but are not limited to:

1) Chemical Processing – Anodize, Alodine, Passivation, etc.
2) NDT – X-Ray, Eddy current, MPI, etc…
3) Welding- Brazing, Fusion, Flash, etc.
4) Cleaning – Ultrasonic, etc.
5) Heat Treatment- Annealing, Overage, etc.
6) Materials Testing- Hardness testing, Conductivity, Mechanical testing etc.
7) Surface Enhancement- Shot Peen, Peen Forming etc.

24 Other (Additional Requirements)

24.1 Prevention of Use of Counterfeit Material

The supplier shall establish, document and maintain a Counterfeit Part Prevention and Control Program using industry standard AS6174 (Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel) and AS5553 (Counterfeit Electrical, Electronics, and Electromechanical (EEE) Parts; Avoidance. Detection, Mitigation, and Disposition) as a guideline. The Counterfeit Prevention Plan shall be documented to prevent the delivery of counterfeit parts and control parts identified as counterfeit. To minimize the risk of using counterfeit material, the Supplier should procure directly from original manufactures, and manufacturer-authorized distributors/resellers with evidence that parts were procured by the original manufacturer and have not been altered or misrepresented.

All of the above counterfeit parts avoidance requirements shall be flowed down to sub-tier Suppliers.

24.2 Protection of Electrostatic Discharge (ESD) Sensitive Material

The Supplier shall have a documented procedure in place that protects ESD sensitive material, when appropriate. The Supplier shall reference MIL-STD-1686, ANSI-S20.20, and EIA 625 for guidance. VO reserves the right to audit the procedure.

24.3 Part Marking

The Supplier shall mark the product in accordance with drawings and technical specifications referenced by the PO. If Supplier is not able to meet the part marking requirement, then they will submit a Deviation Request to Virgin Orbit stating details of the exception needed and also provide recommendations of alternate part marking technique before performing the part marking step.

24.4 Foreign Object Debris/ Damage (FOD) Prevention Program

Supplier will maintain an internal FOD prevention program. Supplier will ensure that this program is in accordance to and compliant with Aerospace FOD prevention program standard AS9146.

Supplier shall maintain cleanliness of manufacturing areas in compliance to this standard and will ensure through periodic inspection or other validation techniques that Virgin Orbit product is not exposed to any form of FOD.

In the event that Virgin Orbit identifies FOD in received product, then the product may be shipped back to the Supplier for rework, investigation and corrective action.

24.5 First Safety Hardware (FSH)

When a component drawing from VO is designated as Automated Flight Safety System (AFSS), Supplier is expected to submit a copy of the Process Flow Diagram (PFD) and Control Plan (CP) to VO for approval prior to initiating production.

These documents will be revision controlled and any change in revision of the Control Plan will result in an FAI executed by the Supplier.

Supplier shall include the document number and revision of CP and FAIR on the CoC.

24.6 Supplier Audits

Periodic onsite Supplier and Sub-Tier audits maybe conducted by VO personnel. VO will notify Supplier prior to conducting the audit and also share the audit scope. It is the Supplier's responsibility to ensure that all relevant documents and personnel are available at the time of audit.

Audits may include (but are not limited to) process reviews, QMS audits, and/ or supplier capability assessments, etc.

24.7 Shipping Paperwork

Supplier shall add page numbers to the shipping paperwork package which is provided to VO along with the parts. These page numbers shall be stated on the CoC in the Material Information section. See CoC work instruction for more details.

25 Appendix A: Supplier Quality Clauses (SQC)

SQC1 – Certificate of Conformance

1. Shall be submitted with each shipment. See *Section 22* of this document for additional details.
2. For COTS items packing list can be considered accepted if the Certificate of Conformance note is mentioned on the packing list and the part number and revision match the Purchase Order.

SQC2 – Material, Process and Shipping Certification

The following certifications shall be included with the shipment as applicable.

1. Material Certification
   a. Document with chemical/physical test results that demonstrate compliance with the applicable raw material specification requirement. A copy is required for all purchased raw material.
   b. Material Heat and / or Lot number; and specification will be stated on the CoC.
2. Process certification in accordance with SQC21.
3. Shipping certification
   a. Required if product is shipped to the VO in an environmentally controlled storage unit.

SQC3 – Proof of Traceability

Supplier provides a document that shows the traceability of the parts delivered on the PO. Supplier shall use VO proof traceability form found on the VO Supply Chain website to complete this information. See Section 19 of this document for additional details.

Note: The Supplier should be able to provide traceability of the finished parts to lot numbers, raw material, and test data as appropriate when requested by the Buyer, in all instances. SQC3 when stated on the PO requires Supplier to provide traceability information along with shipping paperwork and CoC.

SQC5 – Process Flow Diagram

Document that graphically depicts all steps of the manufacturing process, including receiving, material handling, processing, inspection, testing, storage, and shipping. Supplier does not need to provide this document with every shipment, but needs to retain a copy on file and should be able to furnish this document when requested by VO.

SQC6 – Process Failure Modes and Effects Analysis (PFMEA)

1. The purpose of a PFMEA is to identify potential risks and prioritize quality improvement efforts reduce that risk.
2. The Supplier shall complete a PFMEA on the item listed on this P. O. The PFMEA shall include the following:
   a. List all possible manufacturing failures...

b. Explain the effects of the failure.
c. Determine the severity of the failure
d. Determine the potential cause of the failure.
e. Determine the probability of the failure
f. Determine the detectability of the failure
g. Calculate a Risk Priority Number (RPN)
h. Determine the recommended actions.
i. Describe how the error will be detected if the process fails.

3. Supplier is authorized to use their own form. This form should include at a minimum (but not limited to) all items list in note 2 above.

Note: PFMEA has to be approved by Virgin Orbit before Supplier begins manufacturing the product. PFMEA only needs to be maintained on file at the Supplier and will be shared with Virgin Orbit if requested by authorized Virgin Orbit personnel. Supplier is not required to send a copy of PFMEA with every shipment. Supplier is responsible to maintain a revision controlled copy of the PFMEA. Any change/revision to the PFMEA has to be approved by Virgin Orbit prior to implementing change.

SQC7 – Process and Quality Control Plan

Documentation of process requirements, inspections and tests that are conducted to ensure that all products conform to the Buyer's requirements.

1. Describe the feature that is inspected, the specification, the frequency, the measuring device, and the reaction plan if the feature is out of specification.
2. Show emphasis on special controls for critical dimensions and characteristics.

Note: Control plan and PFD has to be approved by Virgin Orbit before Supplier begins manufacturing the product. Control plan and PFD only needs to be maintained on file at the Supplier and will be shared with Virgin Orbit if requested by authorized Virgin Orbit personnel. Supplier is not required to send a copy of Control plan and PFD with every shipment. Supplier is responsible to maintain a revision controlled copy of the Control plan and PFD on site. Any change/revision to the Control plan and PFD has to be approved by Virgin Orbit prior to implementing change. See Section 18.3 of this document for additional details.

SQC8 – Dimension Inspection Results and Ballooned Print

Shows results of inspections for all ***CRITICAL*** characteristics, dimensions, non-reference dimensions, and notes on the drawing.

1. Gather and submit data for all parts in each shipment.
2. Include the device / method of inspection for each feature.
3. Print that has the dimensions and notes numbered to match the dimensional inspection report.

SQC12 – Measurement Systems Analysis

1. Required study for all devices used to measure critical characteristics.
2. Performed to determine if measurement devices are appropriate for their application.
3. Use Gage Reproducibility and Repeatability (Gage R&R) method. Guidelines for acceptance of the measurement system are:

a. Acceptable if error < 10%.
b. May be acceptable if 10% < error < 30%, depending on importance of characteristics, and the nature of the measuring device.
c. Unacceptable if error > 30%. Improvement to the measurement system is required.

4. If the supplier requires guidance, it should contact the associated Buyer's SQE. A blank form (that performs all calculations) will be available.

SQC15 – Functional and Validation Test results

1. Functional test results - Summary of results of testing performed on each production unit.
2. Validation test results - Summary of results for all tests specified by VO Engineering.

Note: See Section 14 for product specific inspection and testing.

SQC19 – Serial/ Batch/ Lot Number Required (as applicable)

Supplier shall mark part and packaging with Serial/Batch/Lot number when SQC19 is called out on the PO. See Section 18 of this document for additional details.

Supplier needs to review VO drawing to verify if a part is serial or lot controlled. In case of serialization, VO drawing will call for serial number requirement. If drawing does not call for serial or lot control but this SQC is stated on the PO, then Supplier shall maintain lot or serial control and provide information via CoC.

SQC20 – First Article Inspection Report (FAIR) and Ballooned print

The Supplier shall conduct First Article Inspection when this clause is stated on the PO. Supplier shall submit a copy of the First Article Inspection Report to VO in accordance with the latest revision of AS9102.

Note: If SQC20 is identified on the PO but the Supplier has already submitted a copy of the FAIR to Virgin Orbit and has received a signed copy of the approved FAIR from VO; then the Supplier ***does not*** have to resubmit a FAIR unless the last delivery date of the part (at the same revision) is greater than 2 years. For Flight Safety Hardware (FSH), Supplier shall provide a copy of FAIR with every shipment. FSH hardware will be designated with AFSS is the product part description.

After an approved FAI is received from VO, the Supplier can transition to performing inspection of critical features (SQC8) for each shipment, unless the product has been designated as AFSS hardware.

This requirement shall be flowed down to sub-tier suppliers as applicable.

SQC21 – Special Processes

The supplier shall provide a certification confirming that parts comply with process and validation test requirements stated on the drawing and specification.

Parts shall be manufactured and/ or processed to the latest revision of the specification and drawing.

A. If Virgin Orbit processes are stated on the drawing, it is supplier responsibility to request copy from VO of the specification as applicable (i.e. MFG-PS-00025, etc.) OR visit the Virgin Orbit Supply Chain Website for the current revision of the specification.

B. If an Industry Standard specification is called out on the drawing, it is the Suppliers responsibility to procure the latest revision of the indicated specification.

   The supplier shall ensure all process and validation requirements stated on the drawing are reviewed during design / contract / PO / RFQ Review; and specification is acquired prior to start of manufacturing. If an exemption is needed, then the vendor has to submit a request in writing to VO (see Deviation Request section 12 of this document for more detail).

C. See section 23 for special process listing and additional requirements.

SQC22 – Source Inspection

Source Inspection shall be conducted in accordance with Section 20.4 of this document.

SQC23 – LOX Cleaning (VO Type 1, 9 and 10 LOX – per MFG-PS-00025)

All parts shall be cleaned, inspected and packaged in accordance to LOX cleaning requirement stated on VO spec MFG-PS-00025 and VO drawing. It is supplier responsibility that they are following the current revision of MFG-PS-00025. See Section 20 of this document for additional details. It is Supplier responsibility to ensure that parts are inspected in accordance to requirements stated in MFG-PS-00025 and results are provided to VO.

Provide certification with shipping paperwork confirming that the parts comply with the LOX cleaning requirement stated on the drawing and MFG-PS-00025. Document compliance to MFG-PS-00025 Specification and Revision on the Certificate of Conformance (CoC).

SQC24 – Inspection Plan (as applicable)

When this SQC is stated on any Virgin Orbit PO for a given part number, then Supplier shall comply with the Inspection requirements stated on the Inspection Plan. It is supplier responsibility that they comply with the current revision of the Inspection Plan. See Section 20 of this document for additional details.

SQC 25- Shelf Life

The supplier shall establish procedures that address limited shelf life/expiration controlled items. The supplier shall indicate the expiration date/cure date on certifications for products having limited or specified shelf life and any special storage or handling conditions as applicable. Items delivered to Virgin Orbit should have 80% remaining shelf life at the time of delivery unless pre-approved in a waiver/ deviation request by the buyer. Expiration date/cure date shall be identified on the packaging, product container and certifications.

SQC 26- Welding

Welding procedures and welding personnel qualifications shall be performed in accordance with the requirements of the specification identified on the engineering drawing and/ or purchase order. Weld inspections shall be documented and records available for review.

Revision History

Revision	Date	Change
01	06/24/19	Initial Document Release Supersedes SC PROC-10008/A (Supplier-Quality-Requirements)
02	03/02/21	Revised throughout to current process. Added proprietary note to cover page. Deleted reference to QA PROC-20042 throughout. FAI's to be processed per AS9102. Deleted section 23- Referenced Documents. Added section 3 "Applicable documents" and renumbered subsequent sections. Section 4.8- Was per "ISO 10012 and ANSI/ NCLS Z540", is per ISO 17025. Section 15- Added reference to ISO 17025. Section 18- Added "a minimum remaining shelf life of 80% at the time of delivery to VO, unless otherwise authorized by the buyer or designee." Added Section 23- "Special Processes" and renumbered subsequent sections. SQC 2- Added "Process" to title of SQC to match SCQ in in Oracle. Added new item number 2 for process certifications. SQC 21- Was "Process Certification", is "Special Processes". SQC revised throughout to align with section 23. Added SQC 25- Shelf Life Added SCQ 26- Welding