Blue Origin, LLC Quality Clauses

The quality clauses listed below are applicable for Blue Origin hardware and material. Questions regarding the clauses or a need to resolve conflicting requirements contained in a purchase contract should always be directed to the Blue Origin Procurement Representative. Quality clauses are only applicable when specified on the PO. These Quality Clauses correlate to CMPM-PR0009-H 01/21/2021

QC-001* Deliverable Data: Certificate of Conformance. A certificate of conformance or certificate of compliance must accompany all shipments, stating that the process, product, or service furnished is in conformance with all PO and drawing requirements and must contain the following information:

a. Supplier's full name and address
b. Blue Origin Purchase Order number, revision, and PO line number
c. Blue Origin Part number
d. Blue Origin Drawing number, Rev.
e. Serial numbers (as applicable)
f. Heat / Lot no. / Date Code / Job Tracking no. (as applicable)
g. Quantity shipped
h. First Article Inspection Report (FAIR) Number (list as N/A when not applicable)
i. List of all closed / approved Non-Conformances
j. Authorized Quality Representative Signature, title, and date

QC-002* Counterfeit Parts. Supplier must have a counterfeit parts avoidance, detection, mitigation, and disposition program plan using acceptable standards such as AS5553 for electronic parts and AS6174 for all other material. Supplier must only deliver authentic components, devices, pieces, material, modules, assemblies, subassemblies, goods, etc. that are manufactured by or obtained from original equipment manufacturers (OEMs), original component manufacturers (OCMs), or authorized distributors. Supplier must make available to Blue Origin documentation that authenticates and provides traceability of the Parts to the applicable OEM or OCM.

QC-003* Parts Substitution. Part substitutions are not authorized unless a Blue Origin Procurement Representative has approved them in writing. The supplier must notify the Blue Origin Procurement Representative of any End of Life, obsolete or Form, Fit, or Function issues.

QC-004* Foreign Object Debris/Damage (FOD) Prevention and Part Cleanliness. The supplier must develop and maintain a Foreign Object Debris/Damage ("FOD") prevention program for manufacturing areas and associated support function areas. The intention is to prevent introduction of foreign objects into any item delivered under this Purchase Order (PO). Conformance to AS9146 is preferred, however National Aerospace Standard 412 (NAS 412), IPD J-STD-001, and IPD-WP-116, can also be used as guidelines.

The supplier must conduct production processes appropriate to prevent, detect, and remove all FOD from product(s) during manufacture and provide parts clean and free of all FOD prior to shipment to Blue Origin. FOD contamination can be cause for rejection of material.

QC-005 Deliverable Data: First Article Inspection. FAI must be performed by the supplier in accordance with the latest revision of Aerospace Standard AS9102. Supplier must utilize the current AS9102 forms, or equivalent, including:

Form 1 – Part Number Accountability

Form 2 – Product Accountability – Materials, Special Processes and Functional Testing

Form 3 – Characteristic Accountability, Verification and Compatibility Evaluation

All data fields as listed in AS9102 as Required (R), Conditionally Required (CR) or Optional (O) must be completed on Forms 1, 2, and 3 if the data field is applicable. If the field is not applicable, mark with N/A; do not leave the field blank. Form 3 Block 5 Char. No. must be identified on the drawing. Form 1 Blocks 23 and 24 are not required to be completed. For additional information about Blue Origin specific FAIR requirements, Blue Origin has created a guidance document (CMPR-17657 Supplier Requirements for completing FAI Documentation). Please contact an authorized Blue Origin Procurement Representative or Supplier Quality Engineer to obtain a copy.

Supplier must perform a new FAI on a representative part of the first production run or when there is a lapse in production exceeding twenty four (24) months. In addition, any changes or deviations as defined in AS9102 require a full or partial FAI.

The completed First Article Inspection Report (FAIR) must accompany the product on which the FAI was performed when shipped to Blue Origin.

When the end item deliverable for this Purchase Order is software or includes embedded software, the supplier must account for the software testing, installation, and configuration verification within the FAI documentation.

This note is not applicable for standard catalog, MIL-STD, or commercial off-the-shelf parts/assemblies.

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QC-007 Deliverable Data. Nondestructive Test (NDT Report): The supplier must provide a copy of NDT reports (radiographic, ultrasonic including the C-Scan inspection report if required, penetrant, etc.) for each item (as applicable), authorized by a representative of the Supplier's Quality function, with each shipment.

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QC-009 Deliverable Data. Material Property Test or Material Certification Data: The supplier must provide the results of any material property test as required by the engineering drawing, referenced specification or component specific criteria for each material lot.

QC-010 Deliverable Data: Acceptance Test Procedures (ATP). As required by the drawing or specification, the supplier must generate an ATP for final acceptance testing, to include any revision of the ATP, as well as test programs, software, and hardware. The ATP must include equipment lists, equipment calibration status, and test procedure and data sheet(s) necessary to verify the functional requirements, weight, and outline of dimensions required by the equipment specification. This ATP and any subsequent changes must be submitted in advance and approved by the Blue Origin Procurement Representative prior to testing deliverable end items. The supplier must provide final complete detailed ATP data for each item, in supplier format, and as authorized by a representative of the supplier's Quality function with each shipment.

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QC-014 Deliverable Data – Harness. The Supplier must take pictures showing the fabrication condition of the harness(es) of the following if applicable to the build: wire termination and connection of connector before installation of backshell/boot, Teflon film applied to cables/wires before EMI overbraid, and depth of potting material in backshell. Pictures to be submitted to Blue Origin with the shipment.

QC-015 Nondestructive Test Techniques Each nondestructive test (NDT) technique and/or procedure must be approved by a Blue Origin Level 3 NDT Engineer prior to performing the respective process. The approved testing house must submit their test technique on their form for approval through the Purchase Order contract holder to the Blue Origin Procurement Representative. Part number specific test techniques must be submitted for approval / reviewed at each drawing revision or controlled by the applicable process specification. Additional information may be requested for the approval.

QC-016 Deliverable Data: 100% Dimensional Inspection The supplier must submit an inspection report showing 100% of all features with explicit geometric requirements including those features that are detailed in notes. Serial numbers and/or lot codes must be referenced on the inspection documentation. AS9102 Form 3 or equivalent may be utilized for reporting purposes.

QC-017 Fixed Processes The parts or processes on this Purchase Order are considered critical for Blue Origin applications and require strict control of manufacturing and processing operations. All planning documentation such as manufacturing plans, processing plans, inspection check sheets, shop travelers, routers, flow process diagrams, operations sheets, operation sketches, CNC programs, outside process procedures, material or sources, and any other documents necessary to manufacture the part/process must be fixed.

The supplier must furnish copies of their manufacturing and processing routing sheets to be used during production. Upon Blue Origin's review and approval of the first article and the planning documentation, the supplier's manufacturing and process planning will be considered as 'fixed'.

After Blue Origin has approved a fixed process, additional changes to that process are prohibited unless prior written approval is provided by the Blue Origin Procurement Representative.

The supplier must furnish a revised FAIR, reflecting the changes in product or process as a result of changes in planning approved by Blue Origin, with the next delivery of products on the Purchase Order. Minor revisions that do not require submittal for approval are:

- typographical corrections
- changes to sub-tier suppliers when not specified or controlled

Documentation must be identified as "FIXED PLANNING", controlled in a Process Control Document or similar control document, and include a revision list containing the details of all changes.

QC-018 Deliverable Software / Complex Electronic Hardware For software or Complex Electronic Hardware (CEH) installed in a safety critical system, supplier must define, implement, and maintain a quality system (QMS) or quality plan (QP) that defines quality planning, processes, and metrics to ensure software and CEH development requirements are met. Supplier's QMS or QP must meet:

- AS9115 and as applicable the following industry standards:
  - DO-178C if supplying deliverable software
  - DO-254 if supplying CEH
  - or Blue Origin approved alternate means of compliance with an equivalent level of safety to DO-178C and DO-254

QC-019 Deliverable Data – End Item Data Package (EIDP). The supplier must provide an End Item Data Package (EIDP) for product final acceptance and with the shipment. The EIDP must include at a minimum the following (when applicable):

a. Supplier's Certificate of Compliance/Conformance
b. Certificate of Compliance/Conformance from sub-suppliers which contain sub-supplier name, location, contract number, part number and revision, and serial number
c. Specification / Drawing number and revision
d. As-built configuration, including a parts list identifying all part numbers, revision, serial numbers (when required), lot numbers, quantities, manufacturer, raw material conformance report, consumed materials, and life limiting information such as shelf life or number of cycles.
e. Proof of compliance to traceability to material lot (serial number, lot number, batch number, software version, heat lot etc.) and any applicable requirements imposed by drawing or specification standards
f. Non-conformances with proof of Blue Origin acceptance
g. Incorporated Engineering Change Notices
h. Type of inspection performed, equipment calibration log, and recorded results
i. All acceptance or Qualification Test data and reports
j. Total quantity of items tested, quantity of items accepted, and quantity of items rejected
k. Recorded Part Mass
l. Applicable GIDEP alerts, waivers, deviations, and incident reports

Blue Origin will refuse to accept the item if the supplier fails to submit certifications, documentation, test data, or reports specified in the procurement document. Documentation must include Blue Origin's source inspection if such source inspection is performed.

Written approval must be obtained from Blue Origin for any deviations to the EIDP.

QC-020* Material Review Authority. The supplier and/or any of their suppliers/subcontractors do not have authority to process use-as-is, repair, or standard repair procedures via their Material Review Board (MRB) for Blue Origin designed parts or product unless otherwise specified in this Purchase Order or other contractual documentation.

When a nonconformance is discovered by the supplier, the supplier must notify the Procurement Representative with the relevant information via the supplier waiver request form or equivalent. Blue Origin will perform the MRB review per our internal processes and procedures. Depending on the risk of the product and the operating environment, Blue Origin may authorize Material Review Authority to the supplier.

Nonconforming Blue Origin designed product may be dispositioned as use-as-is or repair, after review and authorization from the appropriate Blue Origin Responsible Engineer (or designee) and Quality representative. The repair process should be approved in writing by the Responsible Engineer (or designee) prior to implementation.

The Blue Origin Procurement Representative will notify the supplier of the MRB disposition and next steps. The Procurement Representative must be notified and approve any shipment of nonconforming parts or products.

This MRB authority requirement is not applicable to Commercial off the Shelf (COTS) products or supplier designed hardware.

QC-021 Electronic Data Transmission. The supplier must communicate all data and documentation as specified by general notes, quality clauses, and/or other required documentation electronically. Documents must be sent via one or more of the following methods:

1. The Blue Origin Supplier Portal under the part specific PO and Line item.

2. Email to the Blue Origin Procurement Representative with Blue Origin Purchase Order number in the subject line. Supplier must attach to the email an individual file for each line item. Documents corresponding to that line item must be submitted via PDF. Note that all ITAR restricted information must be encrypted and the password supplied separately.

3. Secure File Transfer Protocol (FTP) Server

It is recommended that files be named as follows for emails or Portal/Server uploads: "SupplierName Type of file - Part Number_SerialNo. PO#.pdf" (e.g. "ABC Parts Inc. FAIR – 123-034-0200-001, 002, 10-000010.pdf)

QC-022* Change Control Requirements. For Blue Origin Designed Products and Class 1 Changes:

> Blue Origin defines Class 1 changes as changes that are non-interchangeable and break backward compatibility including but not limited to fit, form, or function.

The supplier or sub-tier supplier must not incorporate changes to design, material, part, process, procedure, tooling or test equipment without prior written approval through the Blue Origin Procurement Representative for changes to Blue Origin designed products or for Class 1 changes.

For supplier Design Authority, COTS Products, and Class 2 Changes:

> Blue Origin defines Class 2 changes as changes that are interchangeable in all applications.

Supplier must provide notification prior to implementation of changes via a Product Change Notice (PCN) or some other communication method for review and concurrence of the change classification. These notifications must be submitted through the Procurement Representative as the supplier becomes aware of the change.

QC-023 Temperature / Perishable / Shelf Life Sensitive Materials. When materials delivered under this Purchase Order are temperature/shelf life controlled and/or perishable, the supplier must provide certifications for temperature, perishable and age sensitive materials (e.g. epoxies, paints, bonding agents, prepregs, adhesives, etc.), which reflect date of manufacture, date of test, shelf life, expiration date, and storage temperature as it applies to each lot/batch. Container label(s) must also reflect applicable lot/batch number(s), storage temperature, expiration date, and date of shipment. Product delivered to Blue Origin must have a minimum of 80% remaining of shelf life upon receipt, unless approved by Blue Origin in advance.

When temperature controlled (or time at temperature controlled) material is involved, the supplier must provide material packaging suitable to maintain proper temperature during transportation from their facility to Blue Origin. The supplier must provide the necessary temperature measuring equipment to monitor the material during transportation to assure compliance to the specifications of the Purchase Order.

QC-024 Manufacturing Software. Any software used for manufacturing of hardware or software deliverables, including firmware, must have a system for control including procedures, records and revisions available for review any time upon request from Blue Origin.

QC-025* Sub-tier Suppliers. The supplier must have processes in place to assure full compliance to all quality Purchase Order (PO) notes and requirements applicable to this PO. When products or services applicable to this PO are procured by the supplier from sub-tier suppliers, the supplier must flow the quality PO note requirements and all other requirements, as necessary, to ensure full compliance is achieved.

QC-026 Deliverable Data: Report of Design Characteristics. The supplier must inspect, record, and provide a report of design characteristics for each attribute / feature that is specified / listed in the PO. If no requirements are specified, no additional reporting is required. The inspection report must be submitted as part of the documentation package accompanying each shipment. Unless otherwise specified, serial numbers and/or lot codes must be referenced on the inspection documentation. AS9102 Form 3 or equivalent may be utilized.

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QC-028 Sampling Inspection. Sampling inspection may be utilized during performance of this order. Prior to use, the sampling plan must be submitted to Blue Origin Procurement Representative and approved. Blue Origin Quality Engineering will evaluate the risk and determine the appropriate acceptance requirements. The use of sampling inspection in no way affects Blue Origin's right to reject any unit(s) of product found defective.

QC-029* Special Processes. All special processes as identified by Blue Origin engineering and/or the Purchase Order require Nadcap accreditation or approval in writing by Blue Origin. Certifications for the Nadcap special processes listed must be submitted with each shipment and include the specification and revision level:

Metallic and non-metallic Additive Manufacturing (including but not limited to Laser Powder Bed and Laser Powder Spray), Brazing, Coatings, Chemical Processing (including Painting), Castings, Forgings, Heat Treating, Hot Isostatic Press (HIP), Non-Destructive Testing, Non-Conventional Machining (e.g. Chemical milling, Electrostatic Discharge Machining (EDM)), Laser Cutting, Surface Treatments (e.g. Alodine, Anodize, Plating), Thermal Spray Coatings, Non-metallic composites, Welding

Prior to selecting/using a Nadcap accredited or Blue Origin approved special process supplier, the supplier and/or sub-tier suppliers must contact the selected special process supplier and confirm that they currently perform the specific Type, Class, Method, etc. per the associated drawing requirements.

Supplier must notify Blue Origin Procurement Representative within three (3) business days of receiving information related to the suspension or disapproval of the supplier or sub-tier supplier's special process approval by their accreditation body. Supplier must also notify Blue Origin of any work delivered to Blue Origin during the period of any such suspension or disapproval.

If the shipment contains multiple special processed lots within each manufactured lot, each processed lot must be segregated and identified to maintain complete traceability in each shipment. (Example: When a manufacturing work order is split into two separate heat-treated lots, each heat-treated lot must be segregated and identified to maintain traceability in the shipment). Also refer to QC-034 Traceability for additional requirements.

QC-030* Source Acceptance Blue Origin source acceptance must be performed as specified (in-process and/or final). Please notify Blue Origin five (5) working days in advance of the date source acceptance is required at your facility. A Blue Origin source acceptance does not preclude subsequent inspection nor does it relieve the supplier of the responsibility to provide acceptable product. Source acceptances may include Blue Origin personnel or contractors from Blue Origin in addition to Blue Origin customer representatives and/or regulatory authorities.

Note: Components requiring precision cleaning must have an In-process inspection performed prior to cleaning that must include all requirements and documentation available to that point of completion. Final acceptance can be completed via a remote digital review of the remaining steps.

QC-031* Quality Management System. Supplier must maintain a quality management system (QMS) conforming to the requirements of the elements described in AS9100, AS9120, or ISO_9001. Third party registration by an accredited registrar may be accepted. The supplier's QMS must be subject to review and approval at all times by Blue Origin whether or not the supplier holds a 3rd party accreditation. Suppliers declaring system compliance to AS9100, AS9120, or ISO_9001 with no formal accredited registrar may be reviewed by Blue Origin.

Supplier must notify Blue Origin Procurement Representative within three (3) business days of any suspension or disapproval of the supplier's QMS by their accreditation body. Supplier must also notify Blue Origin of any work delivered to Blue Origin during the period of any such suspension or disapproval.

If a non-conformance that affects the product or its performance is discovered by the supplier prior to shipment a request for waiver must be submitted. All such requests must be made in writing. Nonconforming shipments are prohibited without prior written approval from the Blue Origin Procurement Representative.

When a supplier has determined or suspects that an undocumented nonconformance has been shipped to Blue Origin, the supplier must notify the Blue Origin Procurement Representative of the condition in writing within three (3) business days of when the nonconformance was recognized.

Risk Notification – Product Alerts: Blue Origin must be promptly notified whenever the supplier becomes aware or reasonably suspects that any product delivered to Blue Origin is, or contains a component that is, subject to a recall notice, warning alert, GIDEP Alert, and/or any other type of notification or concern regarding product authenticity, quality, safety, process integrity, and/or specification compliance.

QC-032* Calibration. The supplier must perform all inspections and tests using calibrated equipment. For calibration service providers or test laboratories, accreditation to ISO 17025 is preferred. Materials used to meet applicable drawing requirement and procurement documents must be included.

QC-033* Identification/Marking. The supplier must identify all items, parts, components, sub-assemblies and/or assemblies as required by the drawing, as specified by the Blue Origin Purchase Order, or per the SAE specification for the product.

QC-034* Traceability. Each manufacturer's lot within a shipment must be segregated and identified to include the quantity and lot number on each Certificate of Conformance. There must be clear links (e.g. heat #, Lot/Batch number) that tie the entire certification package of the shipment together. This includes special process certifications performed by sub-tier suppliers.

- Raw material and forging stock that is provided to Blue Origin must include lot, heat lot, batch number, etc. as applicable, and origin of manufacture.
- Components/Assemblies must include the original manufacturer's part number, lot number and/or date code. Traceability data for electronics, electrical parts, raw material, and mechanical parts must be readily retrievable and provided to Blue Origin upon request.
- Distributors must maintain clear traceability to the original manufacturer for each lot in a shipment and it must be readily retrievable and provided to Blue Origin upon request.
- Any additional traceability requirements must be listed in the PO Notes.

QC-035 Assembly Review. Blue Origin assembly review must be performed as specified (in-process and/or final) by the Purchase Order. Please notify Blue Origin ten (10) working days prior to the shipment of end deliverables for the option to complete an on-site or virtual review by Blue Origin.

Examples of the types of items that can be reviewed:
- Completeness of assembly procedures
- Process records showing compliance to requirements
- Installation / Assembly witness photos and signoffs
- Approved redlines/blacklines
- Known configuration, traceability of assembled hardware to build
- Other observations – facilities cleanliness, storage/handling, etc.

A Blue Origin assembly review acceptance does not preclude subsequent inspection, nor does it relieve the supplier of the responsibility to provide acceptable product. Assembly reviews may include Blue Origin personnel or contractors from Blue Origin in addition to Blue Origin customer representatives and/or regulatory authorities.

QC-036 Electrostatic Discharge (ESD) Control The supplier must maintain a documented Electrostatic Discharge (ESD) control program. All control program elements for electrostatic sensitive devices must be in compliance with ANSI /ESD S20.20 Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices), and include documented employee training, recertification and record keeping. Additional elements of ESD controls may be listed in the PO notes, statement of work, or drawings/specifications.

QC-037 Spaceflight Fastener Requirements Supplier must ensure that all Spaceflight fasteners (installed and/or uninstalled) provided to Blue Origin meet the requirements of NASA-STD-8739.14 (supersedes NASA-STD-6008). Supplier must include a certification document stating that the delivered Spaceflight fasteners comply with the requirements of NASA-STD-8739.14.

QC-038 Deliverable Data: Instrumentation Calibration
Instrumentation calibration must be performed by the OEM with AS9100 accreditation, a third party supplier with ISO 17025 accreditation or ability to show uncertainty summary in accordance with Z540.3 standards.
If a minimum test accuracy ratio of 4:1 cannot be achieved, Blue Origin must be notified prior to shipping/returning the instrument.

The supplier must provide a copy of the calibration reports for each item (by serial number), authorized by the supplier's Quality representative, with each shipment. The calibration report must include:
- Part Number
- Serial Number
- Measurement Uncertainty (Mu)
- Environmental Conditions
- Traceability for Standards used during calibration
- Name or unique identifier of the person performing calibration
- Date of Issue on the Report
- Date of Calibration Performance
- As found (if applicable) and as left data to be included
- Confirmation that no oil use nor any equipment that has been in contact with oil for pressure calibrations. GN2 to be used only.

QC-039 Weld Process Approval
Each Weld Procedure Schedule (WPS), Procedure Qualification Report (PQR) and Welder Performance Qualification (WPQ) must be approved by a Blue Origin Weld/M&P Engineer prior to performing the respective process. The approved supplier must submit their WPS, PQR and WPQ on their form for approval through the Purchase Order contract holder to the Blue Origin Procurement Representative. Part number specific WPS, PQR must be submitted for approval / reviewed at each drawing revision. Additional information may be required for the approval.