Supplier Quality Requirements

ORBITAL CORPORATION LIMITED ASX:OEC | ABN 32 009 344 058 *(Incorporated in Western Australia)*
A : 4 Whipple Street, Balcatta, Western Australia, 6021 | PO Box 901, Balcatta, Western Australia, 6914
P : +61 (08) 9441 2311 | F : +61 (08) 9441 2345 | E : contact@orbitalcorp.com.au | ORBITALUAV.COM

CHANGE LOG

Date	Version	Modified By	Summary	Section Modified
01/05/2020	1.1	C. Franey	Corrected Section references.	Various
08/06/2021	1.2	A. Mills	Alignment of Word / PDF revisions	N/A
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08/06/2021	1.4	A. Mills	Clarified some of the reference standards	4.0
21/02/2022	1.5	A. Mills	Updated document retention to 7 years	5.5
21/02/2022	1.6	A. Mills	Minor corrections / update to change log	Change log
18/05/2022	1.7	M. Holden	Record retention period increased to indefinitely, or disposal with written authorization from the Orbital Quality Manager.	5.5

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1 Purpose

To define Orbital's Supplier Quality Requirements for items or services procured from suppliers by Orbital for use in the manufacture, service or repair of UAV related products.

2 Scope

This policy applies to all suppliers contributing to the product realisation process (Goods and Services) based upon approval criteria as required. These requirements are in addition to the standard Orbital Purchase Order Terms & Conditions.

3 Glossary & Definitions

The following acronyms and initialisms are used in this document.

Table 1: Glossary of Terms

Term	Description
BoE	Basis of Estimate
CofC	Certificate of Conformance
DMR	Discrepant Materials Report
ESD	Electrostatic Discharge
FIFO	First In First Out
FMEA	Failure Mode and Effects Analysis
FOD	Foreign Object Debris
GR	Goods Receival Form
GRAF	Goods Receival Acceptance Form
GVI	General Visual Inspection
HSE	Health Safety and Environment
NC	Non-Conformance
NRE	Non-Refundable Expenditure
PDI	Pre-Delivery Inspection
PSA	Propulsion System Assembly
UAV	Unmanned Aerial Vehicle

The following words, terms and or phrases will be interpreted per the definitions below:

- **Certificate of Conformance (CofC)** – A document certified by the original manufacturer that the supplied material, part or service was made/delivered and tested in accordance with required specifications.

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- **Reconfiguration** – A type of rework to convert an existing article to a new configuration or part number.
- **Repair** – Action to return an article to serviceable condition. Repairs require a process approved by the design authority, outside of ordinary production, to return the article to a serviceable state.
- **Rework** – Action to return an article to product definition conformity. Once rework is complete, no non-conformity exists.
- **May** – An allowable action.
- **Shall** – A mandatory action.

4 Referenced Documents

Orbital documents/forms referenced in this policy are available electronically to suppliers. Standards are copyrighted and need to be purchased from the standards organisations by the supplier if required.

4.1 International and National Standards

Standard	Title
ANSI/ESD S20.20	Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)
AS5553	Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition
AS6174	Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel
AS9006	Deliverable Aerospace Software Supplement for AS9100A
AS9100	Quality Management Systems – Requirements for Aviation, Space and Defence Organisations
AS9102	Aerospace First Article Inspection Requirement
AS9103	Aerospace Series, Quality Management Systems – Variation Management of Key Characteristics
AS9146	Foreign Object Damage (FOD) Prevention Program – Requirements for Aviation, Space, and Defence Organisations
ASTM D3951	Standard Practice for Commercial Packaging
FAR 2.101	Federal Acquisition Regulation 2.101 – Definitions “Commercially available off-the-shelf (COTS)”
IPC-A-610	Acceptability of Electronic Assemblies
IPC-WHMA-A-620	Requirements and Acceptance for Cable and Wire Harness

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ISO 9000	Quality Management Systems – Fundamentals and vocabulary
NADCAP	National Aerospace and Defence Contractors Accreditation Program Special Process Certification

4.2 Orbital Policies, Procedures and Forms

Document Number	Title
DOC0100	Product Identification and Traceability
DOC0205	9023_Supplier Corrective Action Report Template
DOC0230	9024_Certificate of Conformance Template
DOC0327	AS9102 First Article Inspection Report Handbook
DOC0329	Notification of Non-Conforming Material
DOC0330	Supplier Change Request
DOC0331	Supplier Change Notice

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5 Supplier Requirements

5.1 General

5.1.1 Suppliers shall ensure that raw materials, parts, assemblies, sub-assemblies and services conform to required specifications outlined in:

- Purchase Orders
- Contracts
- Product definitions in the form of drawings, functional product specifications, functional test requirements, and;
- any other applicable requirements provided by Orbital.

5.1.2 Suppliers shall establish and maintain a documented quality management system (QMS) that is in accordance with **AS9100** – applicable to the activities being undertaken on behalf or Orbital.

5.1.3 Fundamentals and vocabulary of the QMS shall be interpreted in accordance with **ISO9000** and **FAR 2.101** (COTS definition).

5.1.4 Suppliers shall establish and maintain processes to prevent the purchase and use of counterfeit components, materials or parts in accordance with AS5553 and / or AS6174

5.1.5 Suppliers are responsible for flowing product and quality requirements to their supply base and controlling the quality of materials, parts and services received from their sub-tier suppliers per Orbital's requirements.

5.1.6 Suppliers shall establish a method to internally review and control nonconforming items and notify Orbital of non-conformities as soon as practicable (Refer to Section 5.3).

NOTE: Suppliers are responsible for the quality of all products purchased from sub-tier suppliers, including any sources designated by Orbital.

5.1.7 Suppliers shall accommodate requests for on-site audits and or Supplier development activities with reasonable notice.

5.1.8 Where required by contract, U.S. Government Representatives shall be permitted to inspect any and all work at the Supplier's facilities or at sub tier supplier facilities. Quality control, inspection and manufacturing processes are subject to review, verification and analysis. This includes any regulatory agency that requires access. Supplier's shall give the U.S. Government Representatives the right to make inspections while work is in process.

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5.2 Certificate of Conformance Requirements

5.2.1 Certificates of Conformance shall contain:

1. A statement that the supplied material, part or service was made/delivered and tested in accordance with required approved specifications and provide for traceability back to the original source for all procured items.

NOTE: Because an NC notates exceptions to conformity, any relevant NC number is required to be listed on the CofC as part of the statement.

2. Purchase Order number.
3. Item Name, Number and Drawing Revision as defined on the Purchase Order.
4. Applicable Serial Number/s, Date/s of Manufacture (DOM), Lot Number/s, or Batch Code/s as noted on the drawing.
5. Supporting documentation of compliance to contract or purchase order requirements.
6. Be formatted on Seller's company standard form or Seller's company letterhead containing Seller's name and contact information.
7. Signature, title and dated by an authorised representative of the supplier.
8. Stated adherence to **AS5553** for electronic components/assemblies, when applicable.

Suppliers may adopt Orbital's CofC template 9024_Certificate of Conformance Template if their own template does not cover all these requirements.

5.3 Communication and Notification Requirements

Orbital is committed to building strong supplier partnerships. This section provides guidance to suppliers for effective communication with Orbital.

Written communications shall be conducted by Orbital's Authorised Engineer's or Procurement Representatives. Suppliers shall not accept verbal directions to perform work.

5.3.1 Supplier's shall formally notify Orbital of:

1. Changes to their QMS and/or their Quality Management representative, and the effective date of the change.
2. Changes in their manufacturing process that may invalidate the originally submitted FAIR. If such a change occurs the Supplier must produce an approved FAIR, or delta FAIR, before recommencing production. Refer to **Section 5.7** of this document and Orbitals AS9102 First Article Inspection Report Handbook for more detail on when a FAIR is required.

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3. Nonconforming product detected before delivery – Non-conforming dispositions of 'Repair' and/or 'Use-As-Is' always require documented approval from Orbital before shipment of the product using Orbital's Notification of Non-Conforming Material form.

4. Nonconforming product detected after delivery.

5. Substitutions of materials, parts, testing, software or services – substitutions are prohibited without prior written agreement from Orbital. Refer to **Section 5.4.3** for guidance on how to present a change request or proposal to Orbital. All substitute items shall conform to contract and/or purchase order requirements.

6. Counterfeit Item(s) delivered to Orbital – Supplier's shall disclose to the Authorised Engineer or Procurement representative, in a timely manner, when counterfeit items may have been delivered to Orbital.

5.3.2 Orbital will notify the Supplier of:

1. Nonconforming product detected by Orbital – Orbital will inform the Supplier of the disposition of any nonconformant parts. If the part is not suitable for use the Supplier shall rework or credit the parts. The Supplier shall also provide a non-conformance report detailing the root cause of the issue, the immediate corrective action/s, and all preventative measures implemented to prevent reoccurrence of the issue. If a serious issue is detected, an 8D report may be requested from the Supplier.

2. Any change to the product definition, inspection requirements, and functional test requirements. Orbital will follow the Engineering Change process (Section 5.4) whenever a change to an "Approved for Manufacture" drawing is required.

5.4 Change Management

5.4.1 Suppliers will be consulted when Orbital instigates an engineering change to ensure any other opportunities for improvement are captured as part of the overall change.

5.4.2 The Supplier will be issued with a Supplier Change Notice once a change is approved internally. This form formally introduces the change to the supplier, captures how the change affects the Supplier, and obtains formal acknowledgement of the change from the Supplier. They key effects that must be covered are:

- Timing – How long will it take to produce the first production part
- Quality – Describe what, if any, quality measures needed to be updated and/or introduced (e.g. Job travellers, build manuals, CNC programs, quality checklists, etc.)
- Capacity – Is the weekly/monthly or maximum capacity affected by the change.
- Any impact to costing – to be detailed in an updated Basis of Estimate (piece cost, non-recurring engineering or tooling).

5.4.3 Suppliers are encouraged to recommend design and or/process improvements to Orbital via the Supplier Change Request form. If accepted by Orbital, these changes shall follow the Engineering Change process before being implemented.

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5.5 Record Keeping

5.5.1 Supplier shall maintain all Orbital material and product related records indefinitely. Records shall only be disposed of with the written authorization of the Orbital Quality Manager.

5.5.2 Records are required to identify the product, service, equipment, calibration status, person, dates, and event to which they pertain.

5.5.3 Records shall be readily available for review by Orbital within 24 hrs of request and be stored in a manner to protect them from deterioration, damage and loss.

5.6 Delivery Documentation

5.6.1 All delivery documentation required by Orbital shall accompany the product at the time of delivery. In addition, electronic copies may be sent prior to delivery to the appropriate Component Engineer and/or Storeman.

Note: Paper copies of the invoice, CofC and material certificates should be placed both on the inside and the outside of the shipping package. This is to guarantee that the receipt of the delivery can be completed at the time of arrival, therefore expediting the payment process.

1. **CofC** – Certificate of Conformance (refer to **Section 5.2**)

2. **Material Certificate/s** – Certificate/s that the raw material used in the manufacture of the part was made/delivered and tested in accordance with the approved specifications. The material certificate shall enable traceability back to the original source of the material.

3. **Acceptance Testing Records** – Documentation proving all required acceptance and functional testing met the specified acceptance criteria.

4. **Inspection Records** – Inspection data for all critical, significant, and key characteristic identified by Inspection Plans (reference **Section 5.7**)

5. **Non-Conformance Records (if required)** – Where appropriate, the completed and signed Notification of Non-Conforming Material which describes the non-conformance and approved disposition. Supporting evidence demonstrating the agreed actions have taken place must be included.

    - Repair documentation shall include: the results of an Orbital agreed repair including, the description of work complete, part numbers and serial numbers that were repaired, parts removed, parts installed, calibrated tools used, results of testing performed, reference specifications used that approved the work, who performed the work, date of when the work was performed.
    - Rework documentation shall include: description of work complete, part numbers and serial numbers that were reworked, parts removed, parts installed, calibrated tools used, results of testing performed, reference specifications used that approved the work, who performed the work, date of when the work was performed
    - Reconfiguration documentation shall include: all requirements for rework as well as evidence of traceability between the starting configuration and the

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final configuration (part number and serial numbers before and after reconfiguration)

6. Any other documentation stipulated on the purchase order

5.7 Inspection Requirements

5.7.1 Suppliers shall inspect using controlled and calibrated equipment keeping records of all equipment used, including equipment serial numbers and calibration status.

First Article Inspection

5.7.2 FAIRs shall be performed on the first production run of a new part to verify that all items conform to Orbital's specifications. Suppliers shall use the representative item to verify that their production processes, production documentation and tooling can produce parts and assemblies that meet Orbital's requirements. This first article inspection shall be completed in accordance with the AS9102 First Article Inspection Report Handbook and **AS9102**.

5.7.3 FAI results shall be recorded during the product build process in the Technical Data Package (TDP) provided with the purchase order. The completed FAI report shall contain:

1. AS9102 forms 1, 2, & 3
2. Bubbled Drawing
3. CofC, Travelers, Material Certifications
4. Approved NC, if required

5.7.4 Items found to be nonconforming during the FAI process shall follow the NC process described in **Section 5.3** of this document.

5.7.5 The Pack Slip provided on delivery shall note that a FAIR was completed for the part.

5.7.6 All First Article Inspection Reports (FAIR) and supporting documents shall be submitted to the authorised Orbital Component Engineer or Quality Manager prior to the first shipment.

NOTE: Reference AS9102 for additional information on FAI/FAIR requirements. If the Supplier cannot produce an AS9102 compliant FAIR, they are to inform Orbital at the time of quoting.

5.7.7 The Supplier shall repeat the FAI process when there is:

1. A change to the design of the part or assembly affecting form, fit or function.
2. A change in manufacturing source, process, inspection method, location, tooling, or materials that can potentially affect form, fit, or function.
3. A change in numerical control program or other media that can potentially affect form, fit or function.
4. A natural or man-made event that may impact the manufacturing process.

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5. A non-conformance was found in the original FAIR.

6. Any lapse in production for two or more years. This time is from the completion of the last production run to the actual restart of production.

NOTE: Depending on the level of change, a delta or partial FAIR may be adequate. The supplier shall consult with Orbital to agree on the type of FAIR required.

5.7.8 Suppliers are responsible for flowing down product requirements and managing sub-tier supplier FAI's, FAI records and reporting.

5.7.9 Sub-tier supplier FAIRs shall be readily available and delivered to Orbital upon request.

Production Inspection

5.7.10 Suppliers shall provide all required inspection and testing data to Orbital on, or prior to, delivery at Orbital.

5.7.11 The level of inspection and testing required is dependent on the criticality of the part and will be defined by Orbital and agreed by the Supplier during contract formation.

5.7.12 The complete inspection plan will define:

1. The sampling rate for all defined product characteristics. Product characteristics will be categorised based on risk. The categories are typically:

    - Critical – Always requiring 100% inspection.
    - Major – Usually requiring 10% inspection, although this may be defined otherwise by Orbital.
    - Minor – Only needing inspection on First Article parts.

2. Where applicable, the required results of functional and/or acceptance testing shall be performed per an agreed test procedure.

3. Specific measurement methodologies where Orbital considers this to be critical to the validity of the measurement.

5.8 Workmanship

Workmanship refers to the quality of the product and work performed on the product and shall be interpreted in accordance with the following:

5.8.1 Electrostatic Discharge (ESD): Protect all ESD sensitive products and components in accordance with **ANSI/ESD S20.20** or equivalent.

5.8.2 Electrical, Electronic, and Electromechanical (EEE) components and assemblies:

- Ensure that EEE components are compliant with **IPC-A-610**.
- Ensure that EEE components and assemblies comply with **AS5553**.

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- Suppliers shall have processes to prevent the purchase and use of counterfeit parts.
- Suppliers shall maintain traceability to the original source of all EEE components and devices including those Items in assemblies/subassemblies being delivered to Orbital.

5.8.3 Special Processes: Perform special processes in accordance with **NADCAP** requirements or other Industry Standards.

5.8.4 Cables/Wire Harnesses: Ensure that cables/wire harnesses are compliant with **IPC-WHMA-A-620**.

5.8.5 Part Marking and Serialization: All parts must be identifiable in accordance with DOC0100 Product Identification and Traceability.

- Part marking shall include Orbital part number, serial number or batch code of the item. Date of Manufacture (DOM) may be used as a lot or batch code.
- The minimum level of identification is the batch or lot number. If unspecified, this level of traceability is expected.
- Per **MIL-STD-130N**, item identification marking shall be legible during and endure the life of the product. Marking methods shall not adversely affect the life or performance of the marked item.

5.8.6 All product finishes must be compliant with the finish specified in the product definition (in the form of drawings or functional product specifications).

5.9 Product Preservation

5.9.1 Preservation applies to raw materials, component parts, assemblies and services that affect the final product.

5.9.2 Suppliers shall identify product that requires special care and have preservation processes that protect raw material and finished product from damage.

5.9.3 Suppliers shall have a process for cleaning, prevention, detection and removal of foreign object debris (FOD) as applicable to their products, special handling of ESD sensitive products and Hazardous Materials (HAZMAT), marking and labelling, and shelf life/stock rotations.

5.9.4 FOD prevention shall consider facilities, equipment, tooling and workstations. FOD methods shall focus on the prevention of introduction and detection of foreign objects in finished products and packaging.

NOTE: Refer to AS9146 or equivalent for implementing FOD programs.

5.9.5 Product and raw material shall be protected from damage during all stages of internal processing and delivery.

5.9.6 Suppliers shall implement methods of handling product and raw material that prevent damage, deterioration and use of expired materials.

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5.9.7 Product and raw material in storage shall be assessed at appropriate intervals in order to detect deterioration and prevent the use of damaged or expired materials.

NOTE: Supplier storage should have physical security and control of environmental conditions such as temperature and humidity. Apply adequate first in, first out (FIFO) methods for shelf-life items to prevent use of expired materials.

5.9.8 Suppliers are responsible for packaging products to assure its proper condition and quality upon delivery to any destination specified by Orbital. Packaging shall not be a source of contamination.

NOTE: Refer to ASTM D3951 or equivalent for commercial packaging standard practices.

5.9.9 Suppliers shall place additional labels on the outside of inner packaging material, e.g., bubble wrap and ESD bags, when the serial and/or part number is not visible through packaging material.

5.10 Traceability Control

5.10.1 Suppliers shall maintain a material/product traceability system that assures traceability to applicable requirements from manuals, procedures, plans, specifications and drawings.

5.10.2 A traceability method shall be implemented to track materials and items back to the original source/supplier of all items supplied for use on the product requested on the contract or Purchase Order.

5.10.3 Suppliers are responsible for performing and/or ensuring all inspections, tests and calibrations are completed to confirm that the items or services supplied conform to the contract or PO requirements. Records of conformance shall be maintained.

5.10.4 Commercial Off The Shelf (COTS) items do not have records of conformance. A CofC from the Supplier shall satisfy the contractual traceability requirement.

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