



# QUALITY CONTROL CLAUSES

## STANDARD PURCHASE ORDER QUALITY CONTROL ATTACHMENTS QAF-1142

Aviation

The requirements of these clauses and any procedure or reports executed in implementation thereof, with their terms and conditions, become an integral part of the Purchase Order to the extent specified in the Purchase Order. These requirements supplement, but do not supersede, the presently existing terms and conditions of the Purchase Order. Compliance with the requirements of these clauses does not relieve the supplier of his responsibility for furnishing materials and services, which fully comply with applicable Drawing and Specification Requirements. It does not guarantee acceptance of materials and services by GE Aviation. Government documents are referenced herein by their basic number. Unless otherwise specified in the Purchase Order, the latest revisions and changes are applicable.

All references to GE Aviation include the Bohemia, NY (Long Island) and Pompano Beach, FL locations

Date	Revision	Revision Summary	Approval
3/10/09	W	Removed clauses 19 and 20; removed clause 25b, changed clause 25a to 25; added clause 28c (Lockheed Martin Aeronautics parts only)	<i>M. Partridge</i> <i>[Signature]</i>



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**Clause 1 Government Inspection:**

Government Inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government Representative who normally services your plant so that appropriate planning for Government Inspection can be accomplished.

On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant or, if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, our purchasing agent should be notified immediately. All work on this order is subject to inspection and test by the Government at all times (including the period of performance) and places, and in any event, prior to shipment. The Government Representative who normally services your plant should be notified forty-eight (48) hours in advance of the time articles or processes are ready for inspection or test.

**Clause 2 Quality System:**

- A. Quality System – The supplier shall maintain a quality system that meets the requirements of ISO9001:2000 or AS9100. The system may be subject to a quality review by GE Aviation unless third party registration can be provided.
- B. Quality System for Distributors - the distributor shall maintain a system to ensure the products or services they provide meet the requirements of the Purchase Order. Raw material and/or certifications from the manufacturers shall be maintained by the distributor for at least 3 years and be made available to GE Aviation upon request.

**Clause 3 Supplier Design/Process Changes:**

The Supplier shall notify and obtain approval from GE Aviation for changes in design, manufacturing or assembly processes, manufacturing location or source of supply of their products, whenever such changes affect applicable GE Aviation orders, prior to the contemplated change, regardless of magnitude.

**Clause 4 Certificate of Compliance:**

The supplier shall include in each shipment of parts or materials a Certification of Compliance indicating that the items have been manufactured, inspected, and/or tested, and meet the requirements of the purchase order. The minimum information on the Certificate of Compliance shall include the following: 1) date, 2) purchase order number, 3) supplier's name, 4) part number, drawing number and/or specification number including revision, 5) statement of compliance to the terms of the purchase order, 6) signature of authorized company representative, 7) lot, batch, serial number(s) or other identification. A copy of this certification shall accompany packing list.

Distributors only - A copy of a Certificate of Conformance from the distributor specifying date code, lot/batch code or serial number(s) and the manufacturer's name shall be shipped with each order.

**Clause 5 Flow Down of Requirements:**

The supplier shall flow down to their suppliers the applicable requirements of this purchase order, including any key characteristics.

**Clause 6 GE Aviation Source Inspection:**

Prior to shipment from your plant, you are requested to notify the Buyer three days in advance of shipment so that arrangements may be made for source inspection. Seller will provide GE Aviation Quality Assurance Representative with the facilities to inspect the articles(s).

**Clause 7 Right of Access to all facilities:**

GE Aviation, GE Aviation's customers and/or regulatory authorities shall have right of access to all facilities involved in this order and to all applicable records.

**Clause 8 Test & Inspection:**

GE Aviation, GE Aviation's customer, and the Government have the right to inspect and test all supplies called for by the contract, to the extent practicable, at all places and times including the period of manufacture, and in any event before acceptance. FAR Clause 52.246-2, inspection of supplies – fixed price, is hereby incorporated by reference.

**Clause 9 Test Data:**

Test data readings and/or inspection measurements of items on this order must be taken and documented as indicated below. Particular emphasis shall be given to those characteristics which cannot normally be inspected upon receipt at GE Aviation (hidden measurements). The above record shall be adequate to ascertain the quality level of required articles and of the production processes used in manufacture of parts on this order. The use of electronic media is encouraged.

- A. Inspection measurements (verifiable/objective evidence, no check marks)
- B. Test Data.
- C. Retain at Supplier.
- D. Submit with shipment.

**Clause 10 Approved Process Vendors:**

All processing such as welding, heat treating, electroplating, cleaning, anodizing, chemical filming, etc, shall be accomplished by NADCAP or GE Aviation approved process vendors as reflected in the applicable Approved Vendor List.

Shipments to GE Aviation must be accompanied with a certification demonstrating compliance with all applicable specification as defined by the drawing and/or purchase order.

**10 (A)** This is a Sikorsky Aircraft part; any special process source/laboratory used to make or test this component/assembly must be an approved vendor of GE Aviation and an approved vendor of Sikorsky Aircraft, per Sikorsky Aircraft Document SQAR-100 (Sikorsky Aircraft Approved Source List for Special Processes).

The GE Aviation subcontract, as well as their suppliers and processing sources, must supply GE

Aviation with Certification of Compliance (C of C) that processes performed conform to Sikorsky Aircraft Document SQAR-100.

**10 (B)** This is a Lockheed Fort Worth Division part; any special process source/laboratory used to make or test this component/ assembly must be an approved vendor of GE Aviation and an approved vendor of Lockheed Fort Worth, per LFWC Document QCS-001 (Quality Control Specification Approved Process Sources).

The GE Aviation subcontract, as well as their suppliers and processing sources, must supply GE Aviation with Certification of Compliance that processes performed conform to LFWC Document QCS-001.

**10 (C)** This is a Boeing Company part; any special process source/laboratory used to make or test this component/assembly must be an approved vendor of GE Aviation and an approved vendor of Boeing Company, per Document D1-4426 (Boeing Approved Process Sources).

The GE Aviation subcontract, as well as their suppliers and processing sources must supply GE Aviation with Certification of Compliance that processes performed conform to Boeing Company Document D1-4426.

**Clause 11 Chemical Reports:**

A chemical and physical analysis report shall be supplied with each shipment per purchase order.

**Clause 12 Destructive Analysis:**

A specimen of suitable size and configuration for destructive analysis shall accompany each shipment made against this order. The specimen shall be of the same material and shall have been processed with the lot it represents through all special processes (e.g.: heat treatment, electroplating, paint finish, etc).

**Clause 13 Limited Shelf Life Materials:**

The supplier shall identify each item, package or container with the date of manufacture and shelf life expiration date. Rubber products shall be identified as to the cure and sold date. IN NO CASE SHALL MATERIAL BE SUPPLIED WITH LESS THAN 80% OF ITS SHELF LIFE REMAINING WITHOUT PRIOR WRITTEN APPROVAL BY GE Aviation BUYER

**Clause 14 Material Review Authority:**

NCM identified prior to shipment - Supplier does not have material review authority for parts that cannot be reworked to meet GE Aviation requirements; the supplier shall prepare a Supplier Material Review Request QAF 1012.

NCM identified subsequent to shipment – The Supplier shall provide for timely reporting of delivered nonconforming product that may affect reliability or safety. Notification shall include a clear description of the nonconformity, which includes as necessary parts affected, customer and/or organization part numbers, quantity, and date(s) delivered.



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## Clause 15 Corrective Action:

Supplier is required to provide prompt and effective corrective actions on all reported discrepancies. The supplier is responsible to respond to GE Aviation corrective action requests.

## Clause 16 Packaging:

As a minimum, the supplier shall package all material in a manner that will ensure protection against corrosion, oxidation, deterioration and physical damage during shipment to GE Aviation and as described below:

When parts are procured directly from distributors, the manufacturer's "off the shelf" or "over the counter" packaging in addition to the packaging described below will be acceptable.

- ◆ Electrostatic sensitive devices shall be packaged and handled IAW MIL-STD-1686 using ESD protective material.
- ◆ Coated magnetic cores, toroids, etc. shall be packaged to prevent damage from shipping and uncoated cores, toroids, etc. shall also be packaged to prevent oxidation and/or corrosion to the material.
- ◆ Printed wiring boards shall be packaged individually with sealed or taped ends. Desiccant, dryer or other antioxidant material shall also be used.
- ◆ Materials used to maintain item positions and lead configuration shall permit its removal and replacement without bending and/or destroying the leads.
- ◆ Wrapping and cushioning material shall not crumble, flake, powder, shed, or generate static electricity.
- ◆ Packaging shall be in containers using materials that do not introduce gases or chemicals that could be detrimental to the solderability of parts. Bags or containers made of silicones, sulfur compounds, or polysulfides, or processed with these compounds shall not be used.

**Items damaged due to inadequate packaging will be rejected and returned to the supplier.**

## Clause 17 Solderability:

Components, wires, lugs, terminals, etc., furnished under this order shall meet the solderability requirements of J-STD-002A. Revision in effect as of this order shall apply.

Printed Wiring Boards furnished under this order shall be tested for solderability in the requirement of J-STD-003. Latest revision in effect as of the date of this order shall apply. One board from each lot shall be supplied for use as a solderability sample.

## Clause 18 Traceability Required:

All requirements of QAF-1266 are included as part of this order.

## Clause 19 No Longer Used

## Clause 20 No Longer Used

## Clause 21 First Article Inspection:

During the initial production of the article a First Article shall be performed IAW AS9102, using AS9102 forms. The supplier must list all drawing dimensions, locations and tolerances along with actual measurements as defined by the drawing.

The completed AS9102 forms must accompany the shipment of parts.

## Clause 22 Certificate of Calibration:

The calibration service shall provide a certificate of calibration for each item calibrated. The certificate must include the date of calibration, listed uncertainties, calibration due date, model and serial number of the equipment used in the calibration and a statement that all equipment/standards used are traceable to the National Institute of Standards and Technology (NIST). The certificate must also include the GE Aviation tool number, model number and serial number of the item calibrated.

## Clause 23 Statistical Process Control:

SPC shall be implemented and maintained as part of this purchase agreement. The supplier's SPC program shall be documented and include provisions for; selection and identification of key characteristics and/or processes, statistically based control charting, demonstration of continuous improvement, management supervision, corrective action, training, and flow down to sub-tier supplier. The requirement for and establishment of SPC key characteristics and/or key processes may be based on similar parts or processes.

## Clause 24 Solder Mask:

Do not use UV Cured Solder Mask. Use of **Semi-Matte** Liquid Photo Imageable (LPI) Mask is permitted. Use of all other types of LPI Mask is prohibited.

## Clause 25 Foreign Object Debris/Damage:

The supplier shall develop and maintain a Foreign Object Debris/Damage ("FOD") Prevention Program to prevent introduction of foreign objects into any item delivered under this purchase order.

The supplier shall employ appropriate housekeeping practices to assure timely detection and removal of residue/debris generated, if any, during manufacturing operations and/or normal daily tasks. All occurrences of product rejections due to FOD shall be documented and investigated to determine the root cause of the FOD and implement actions to prevent any recurrence. The supplier shall determine if sensitive areas that may have a high probability for introduction of foreign objects should have special emphasis controls in place appropriate for the manufacturing environment. The supplier shall implement a FOD prevention program and shall provide initial and periodic FOD prevention awareness training programs. Whenever and/or wherever FOD entrapment or foreign objects can migrate, the seller shall ensure that the applicable Quality Clause FOD requirements are flowed down to the supplier's sub-contractor at every tier. The FOD prevention program shall include Sellers periodic self assessment.

## Clause 26 Pure Tin:

Pure tin shall not be used as a base metal or as a plating material on solderable component leads unless approved in writing by the GE Aviation Buyer. **This includes any parts classified as "RoHS Compliant", or otherwise containing "Lead-Free" finishes.**

## Clause 27 Printed Wiring Boards ("PWB"):

Two (2) microsection mounts prepared IAW IPC TM-650 shall be provided with the first shipment of each lot of Rigid PWBs delivered under this order. The mounts shall consist of one (1) each in the horizontal ("X") and vertical ("Y") axis taken from a representative production panel's test strips.

## Clause 28 Special Flow-Down Provisions:

- A. This is an Airbus or Airbus A380 Operator part. It is subject to the EASA Part 21A139 Quality System Requirements which include a Mandatory Occurrence Reporting process for notifying GE Aviation of any nonconformances related to the airworthiness of the products supplied on this purchase order. The EASA Quality System Requirements are detailed in GE Aviation SQ93 which is imposed on this purchase order.
- B. This is a Sikorsky Aircraft Procurement. Parts shall be marked IAW the Buyer supplied drawing. The Certificate of Compliance shall contain the statement "This is a Sikorsky Aircraft Part".
- C. This is a Lockheed Martin Aeronautics part. In addition to the clauses imposed on the purchase order, the supplier shall comply and flowdown to subtiers the Lockheed Martin (LM) Supplier Quality Requirements document Appendix QX. This and all other LM Quality Clauses can be obtained at:

<http://www.lockheedmartin.com/aeronautics/materialmanagement/>