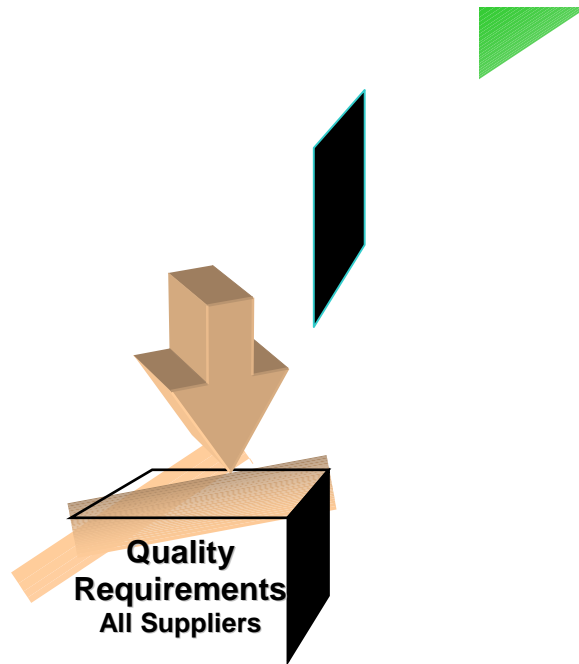


Appendix QX

Supplier Quality Requirements

F-35 Joint Strike Fighter



REVISION RECORD

The latest issue to this document is the version that is available on the Lockheed Martin Aero website: <http://www.lockheedmartin.com/material-management>.

| Revision | Date | Changes |
|----------------|------------|---|
| Original Issue | 03/28/2002 | Completely revised / replaced QR to separate and clarify Program, Commodity, and General application of Quality Requirements based on Program application. This serves as a “pilot” version for other procurements. Adds Revision Record, Table of Contents, and Tables to enable supplier to identify the LM Program and understand which quality system and quality requirements apply based on his product (commodity) type. |
| Revision A | 5/31/2002 | Added definition of “Item or Items” in Document Overview paragraph; clarified First Article Inspection (FAI) requirements in paragraphs 2.3.1, 3.3, & 3.4; added the words “as applicable” to paragraph 2.3.6.1.8 |
| Revision 2 | 8/11/2003 | Changed revision scheme to numbers to align with LM AeroCode guidelines. Removed references to all other Programs to dedicate QX to F-35 JSF suppliers only. Added COTS to Table 1B. Added Service Providers |

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DOCUMENT OVERVIEW

This Appendix QX sets forth the quality requirements applicable to the Items (the terms "Item," "Items," and "Work" to the extent used herein all shall have the same meaning except that "Item" is singular; "Items" is plural; and "Work" is either depending upon the usage context) to be delivered under the purchase order of which this Appendix QX is a part (this "PO"). The supplier is hereinafter referred to in this Appendix QX as "Seller". Lockheed Martin Aeronautics is hereinafter referred to in this Appendix QX as "Buyer"

The requirements of this Appendix QX further supplement those other quality requirements identified within this PO, if any, [e.g. *Integrated Management Plans (IMPs), Integrated Management Schedules (IMS), Supplier Data Requirements Lists (SDRLs), Statement of Work (SOW), Statement of Objectives (SOO), technical specifications, etc.*], and do not reduce Seller's obligation to comply with all other requirements of this PO. Confirmation of any perceived conflict between this Appendix QX and the balance of this PO should be reported/resolved through the Buyer.

Appendix QX is separated into 4 distinct "Parts":

Part 1 – Understanding the Buyer's Quality Requirements: This section is designed to help Seller identify Buyer's Commodity classification / requirement applicable to this PO based on the Item being provided. Use Tables 1A & 1B to determine which specific Appendix QX Commodity paragraphs apply to this PO.

Part 2 – F-35 Joint Strike Fighter Program Specific Requirements: This section defines any ~~requirements~~ ~~to be delivered under this PO.~~

Part 3 – Commodity Specific Requirements:

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PART 1 – Understanding the Prime’s Quality Requirements

- 1.0 This section of Appendix QX is designed to assist Seller in identifying which commodity quality requirements apply to this PO.**
- 1.1** If the Item is a casting, forging, machined part, forging, sheet metal part, composite part, or requires assembly, choose the commodity classification which best represents that Item from Table 1A. Upon selecting the Commodity/Product, move horizontally across the table to identify all applicable Appendix QX paragraphs of Part 3 that apply to this PO.

Applicable paragraphs are marked with an “X” in the column for the specific Part 3 paragraph stated at the top of the column.

- 1.2** If the Item is not one of the commodity classifications stated in paragraph 1.1, select the commodity classification from Table 1B which best describes this PO (i.e., parts).

TABLE 1A – ISO Quality Requirements in Commodity Surveys
Applicable QX Paragraphs to be Identified with

| Commodity / Product | 3.1 |
|----------------------------|---|
| | F1 12 Tf 0 Tc 0 Tw Tf (3.1) Tj 1 ET q 294.6 374.16 23.68 1 27 |

TABLE 1A NOTES:

(1) Appendix QX does not apply to the software development process for programmable logic elements of microcircuits that perform combinatorial or sequential logic (Boolean) functions, which are developed using hardware development techniques. Items related to the software development process are subject to hardware development process requirements, e.g., Field Programmable Gate Array (FPGA) or Applications Specific Integrated Computer (ASIC). Appendix QX DOES apply to the development process for programmable devices used to store executable instructions or data operands which control the detailed operation of a microprocessor or integrated micro controller (commonly known as “firmware”).

(2) Supply Service Providers - Suppliers who are 5th party IDIR Accredited in 2018, ID # 007 Tc417mmon2018 Item

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PART 2 – F-35 Joint Strike Fighter Program Specific Requirements

2. F-35 Joint Strike Fighter Program

2.0 This section defines any unique Program quality requirements.

2.1 **Quality Requirements:** Seller shall meet the requirements called out in Tables 1A or 1B, as applicable, and the requirements stated in Part 4 of Appendix QX.

2.2 **Variation Management of Key Characteristics:** Seller shall comply with the requirements of AS9103, *Variation Management of Key Characteristics*. Copies of AS9103 can be obtained from the Society of Automotive Engineers at www.sae.org.

2.3 **Condition of Supply:** Seller shall comply with the Condition of Supply requirements to be developed by Seller and Buyer Integrated Product Team (IPT), as deemed necessary by the IPT installing/integrating the product (“Receiving IPT”), at no increase in price, estimated cost, or fee to this PO and at no change in delivery schedule.

2.3.1 The Condition of Supply document ensures the receiver and the supplier have a common understanding of the manufacturing process. The Condition of Supply document shall be owned by the Receiving IPT and agreed upon with the Seller responsible for the Item. It shall define and document the special manufacturing, testing, and/or certification instructions to be achieved prior to delivery of aircraft components, (e.g. Forward Fuselage, Wing, Center, Aft fuselage, etc.), Line Replaceable Components (LRC), systems/system build software, harness assemblies, and minor airframe components, (e.g., panels, doors etc.).

2.4 **Material Defect Information:** To provide post delivery support of the Air

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3.3.2 Copies of AS9102 may be obtained from the Society of Automotive Engineers at:
www.sae.org.

| 3.3.3 Seller shall notify Buyer's Field Representative prior to beginning the FAI so
Buyer may make arrangements to witness FAI. This includes incre

3.5.3 Seller shall maintain objective evidence of program compliance. Seller's program shall also provide visibility into quality program trends.

3.5.4 Use or inclusion of pre-existent software products, freeware, shareware, public, or open source software, etc., or in source or object form, embedded into a deliverable software product design is prohibited, except when, if ever, specific Buyer authorization has been previously documented and approved.

3.6 ***Distributor Requirements:*** When Seller is acting as a distributor for any portion of this PO, Seller shall comply with the following requirements of this section 3.6. If Seller adds value to an Item, Seller shall comply with the applicable requirements contained in the commodity-based matrix (Tables 1A or 1B and Part 4 as applicable) for such Item.

3.6.1 Seller shall ensure traceability to qualified product lists ("QPL"), Fort Worth Qualified Material Lists ("FQML"), the Engineering Purchasing Specification ("EPS") or any Buyer directed source, as applicable.

3.6.2 Seller is strictly prohibited from modifying supplies except where approved by the Original Equipment Manufacturer ("OEM") or this PO.

3.6.3 Seller shall establish membership in the Government Industry Data Exchange Program ("GIDEP") and notify Buyer upon receipt of any GIDEP information that affects Items shipped to Buyer. Information on GIDEP can be found at:
<http://www.gidep.org/>

3.6.4 Seller shall include Appendix QX in its contracts or purchase orders to subcontractors and require compliance with it.

3.6.5 Seller may procure Items from other distributors as long as all OEM certifications and test reports traceable to the lot or batch number accompanies the Items to the point where Buyer accepts the material.

3.6.6 Sellers having more than one facility may transfer Items between those facilities as long as all OEM certifications and test reports traceable to the lot or batch number accompanies the Items to the point where the Items are presented to Buyer for acceptance.

3.6.7 Seller shall ensure the OEM's name and lot or batch number as applicable, are referenced on Seller's packing sheet that accompanies each shipment.

3.7 **Buyer-Furnished, Seller-Manufactured or Seller-Owned Tooling:** In addition to the requirements set forth in this document, Seller shall comply with the following:

3.7.1 Buyer Furnished Tooling – Seller shall comply with the requirements of Tooling Manual (TMS-MC-015) concerning Buyer-furnished controlled tooling, and production tools.

3.7.2 Seller-Manufactured Tooling – Seller shall comply with the requirements of Tooling Manual (TMS-MC-015) concerning Seller-manufactured tooling that is identified in this PO as having non-recurring cost.

3.7.3 Seller’s documented quality system shall include written procedures for the control, maintenance and calibration of special tooling, jigs, inspection and test equipment, and other devices used in manufacturing processes.

PART 4 – General Quality Requirements and Instructions

4.0 Unless otherwise specified in

4.2.2 If Seller has received Buyer delegation, Seller must ship product under the guidelines of the specific delegation. When any of the following conditions exist, Seller shall obtain evidence of Buyer's Field Representative's final acceptance on the applicable form, prior to shipment:

- The Item(s) require First Art

4.6.2 Nonconformances outside the Seller's MR authority shall be processed in accordance with this PO and the Buyer website. To request Buyer MR disposition for production Items, Seller shall follow the instructions located at Buyer's website <http://www.lockheedmartin.com/material-management>. Highlight "Quality Requirements" and then select "Corrective Action". If Seller's MR request is for a "Repair" Item returned on a Repair PO, instructions are located at Buyer's website <http://www.lockheedmartin.com/material-management>. Highlight "Terms and Conditions" then select "Forms."

4.6.3 Seller shall document nonconformances and the dispositions. This documentation shall be considered part of Seller's records. Seller shall not incorporate any nonconforming Item into a next assembly until nonconformance has been properly dispositioned.

4.6.4 Prior to delivering Items that have Buyer MR dispositions, Seller shall ensure that root cause analysis and a corrective action plan for that discrepancy has been initiated and/or completed.

4.7 Selection, Control and Contract Flow Down to Quality Control Specification (QCS)-001 Sources

4.7.1 QCS-001 is used to identify both the process sources and the processes that require Buyer approval, prior to use for Items delivered to Buyer. A controlled process is an operation performed on an Item where the operation is not readily inspectable subsequent to its conclusion. Controlled processes have verifiable controls inherent to the process i.e. heat treat, plating, nondestructive testing, etc.

4.7.2 The controlled processes listed in QCS-001 are not applicable to standard hardware (nuts, bolts, washers, etc.) is 1pAiwonary, feo. al 47 induser's lth

4.7.4 The lists of both Buyer-controlled processes and Buyer-approved sources can be found on Buyer's Internet Home Page at:

<http://www.lockheedmartin.com/material-management/>

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4.8. *Seller's Performance of QCS-001 Proc*

- 4.12 Supplier Control:** Seller is responsible for ensuring all Items procured for this PO, from its suppliers, conform to all requirements of this PO. Seller shall ensure all applicable provisions of this Appendix QX are flowed down to its suppliers.
- 4.13 Outsourcing:** Seller shall notify Buyer, in writing, when any KC, Interchangeable-Replaceable features, Fracture Critical features, Durability Critical features, Maintenance Critical features, Safety Critical features, Mission Abort Critical features, or changes affecting form, fit or function are to be subcontracted.
- 4.14 Sales Office:** If Seller utilizes a sales office to administer this PO, Seller shall ensure the applicable provisions of this Appendix QX are provided to all its relevant facilities. Seller shall ensure that Seller's manufacturing facilities are approved by Buyer, as applicable. If Seller is unsure if manufacturing facilities require Buyer approval, contact Buyer Material Management representative.
- 4.15 Inspection Stamps:** Seller shall maintain a system for control and issuance of inspection stamps.
- 4.16 Non-Deliverable Software:** When non-deliverable software is used in the manufacturing, qualification or inspection of deliverable software or hardware, Seller shall maintain a system, which provides for the evaluation and control of each non-deliverable software Item. Such system shall ensure that:
- 4.16.1 Required functions of the non-deliverable software are defined and objective evidence exists that such software performs the required functions.
- 4.16.2 Non-deliverable software is placed under configuration control prior to and during its use. The configuration control system shall ensure only the latest or approved version is being used.
- 4.17 Quality System Changes:** Seller shall notify Buyer, in writing, of any adverse change in its quality system status resulting in the loss of 3rd Party registrar's certification status, or an action taken by the Seller's customer, government, FAA or CAA. The Seller shall also notify Buyer upon any sale, relocation or transfer of Seller's manufacturing operations or upon any change in the quality organization, process or procedures that could affect conformity verification of supplies, products, or services. Notification by Seller shall be made within 30 days of such changes.
- 4.18 Language:** Unless otherwise authorized by Buyer in writing, all records, reports, specifications, drawings and other documentation shall be in English.
- 4.19 Calibration:** Seller shall maintain and deploy a documented calibration system for the calibration and maintenance of tools, jigs, inspection and test equipment. Seller shall use widely recognized Government or Industry calibration standards as guidelines, i.e., ISO 17025, ISO10012-1, ANSI Z540, etc.

- 4.20 FOD Prevention:** Seller shall maintain a Foreign Object Debris/Damage (“FOD”) prevention program, for the engineering design process and controls in manufacturing, to prevent introduction of foreign objects into any deliverable Item. Seller shall employ appropriate housekeeping practices to ensure timely removal of residue/debris, if any, generated during manufacturing operations or tasks. Seller 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.
- 4.21 Manufacturing Plan:** Prior to the start of manufacturing Items identified by Buyer as Interchangeable / Replaceable (“IR”), Fatigue/Fracture Critical (“F/FC”) or Fatigue/Durability Critical (“F/DC”), Seller shall submit a manufacturing flow diagram, including inspection points, to Buyer for Buyer’s review and approval.