HSQR	Harlow Aerostructures, LLC Supplier Quality Requirements	Revision
001		J

Rev	Description	Date
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Quality Assurance Management

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1.0 Purpose

Harlow Aerostructures LLC (HAC) Quality Policy is, "Meeting or exceeding our customer's requirements and expectations for product quality and performance through Teamwork, Continuous Improvement, Six Sigma, Lean Manufacturing and Product Excellence".

The achievement of this policy requires a similar desire and commitment to excellence from our Harlow Aerostructures LLC Supply Chain partners.

HAC Quality Assurance has created this Supplier Quality Requirements Document to clearly communicate our requirements and the Web-based communication tools that have been made available to achieve this end.

HAC is committed to ensure that our suppliers and their employees are aware of their contribution to product/service conformity, their contribution to product safety, and the importance of ethical behavior.

2.0 Scope

This document establishes Harlow Aerostructures LLC quality requirements for suppliers. These requirements apply to Manufacturers, Distributors, and Special Processors providing parts or services for Harlow Aerostructures LLC when this document is specified by inclusion on purchase order or contract issued by Harlow Aerostructures LLC.

In the event that the purchase order or contract conflicts with the requirements of this document, the purchase order or contract requirement will supersede.

3.0 Harlow Supplier Approval

Suppliers' quality systems shall comply with the latest revision of the appropriate quality systems standard along with the Harlow specific quality requirements within this document.

Documented evidence of compliance to the appropriate quality management system (QMS) standard: e.g. ISO 9001, ISO 9002, (AS/EN/JISQ) 9003, (AS/EN/JISQ) 9100 or (AS/EN/JISQ) 9120. Ref: Quality Clause Q1

Harlow approval is required for all Manufacturers, Distributors and Special Processors who supply aerospace parts or services. All written and oral communications with the supplier as well as the customer's specifications, procedures and reports shall be in English.

Harlow sub-tier manufacture suppliers are limited from sub-contracting any manufacturing process without direct notification and approval from Harlow Aerostructures LLC.

Questions regarding quality approval shall be directed to Harlow Aerostructures Quality Department.

4.0 Supplier Performance Monitoring

Harlow evaluates supplier performance in the areas of quality and delivery as applicable.

The supplier is responsible for complying with the quality system requirements noted herein and for meeting performance expectations.

Failure to comply with requirements or to achieve an acceptable performance level of 95% or greater may result in the supplier presenting a corrective action recovery plan, an on-site audit and/or disapproval from Harlow Aerostructures approved supplier list.

Supplier Quality / Delivery is reviewed quarterly but not limited to.

When a suppliers fails to meet >95% (Un-performing) two consecutive quarters, Quality Assurance shall evaluate and determine what actions needed to notify the un-performing supplier(s).

The supplier shall be alerted via formal letter and/or email of the date that any penalty inspection is to begin. This will take place after the evaluation / investigation is complete. Notification will come from the office of Harlow's Quality Assurance Department.

Suppliers may elect to formally dispute the condition as noted on a nonconformance of any results of Harlow's evaluation / investigation. Formal notification, in writing, must be sent prior to the date on which penalty inspection is scheduled to begin to the office of Harlow's Quality Assurance Manager.

- Delivery ratings are determined on the occurrence of the following criteria only when it is determined to be the Supplier's responsibility:

  a. Late deliveries (Item(s) received after due date)
  b. Early Shipment (Greater than 10 Manufacturing days)
  c. On Time (10 Manufacturing days Early and 0 days Late

- Quality/Delivery Ratings: This is monitored but not limited to a quarterly review.

- Delivery - PPM % (Parts per Million) -Total number of late parts, divided by total number of parts received.

- Quality - PPM % (Parts per Million) -Total number of defective parts, (receiving and in-house rejections) divided by total number of parts received.

RED	**< 94.9**
YELLOW	**95.0 – 97.9**
GREEN	**98.0 - 100**

5.0 Manufacturers

In addition to other requirements within this document, Harlow requires manufacturers of materials, parts and assembles to have a quality management system that complies with the (AS/EN/JISQ) 9100 Quality Management Systems - Aviation Requirements, Space and Defense Organizations.

Copies of the AS standards can be purchased from SAE International at www.sae.org or IHS-ASTM Book of Standards - http://global.ihs.com/industry_stds.cfm.

6.0 Special Processors

Special Processors must have a quality management system that is compliant to (AS/EN/JISQ) 9100 Quality Management Systems / Aerospace / Requirements. Approval by Harlow Quality may involve an on-site audit of the supplier's QMS and the applicable special processes. The QMS audit may be waived for suppliers accredited to (AS/EN/JISQ) 9100.

NADCAP accreditation is required in the following disciplines:

- Non-Destruction Testing (RT, UT, PT, and MT)
- Chemical Processing (painting, plating, anodize, etch and various other wet processing)
- Heat Treating (including furnace brazing)
- Welding and Brazing
- Surface Enhancement - shot peen only
- Materials Testing Laboratories (raw material testing)

Information regarding the NADCAP accreditation process can be found at www.prinetwork.org/Nadcap/. It is the supplier's responsibility to ensure that Harlow's Quality department is notified regarding any change of NADCAP/NUCAP certification status. Ref: Quality Clause Q3

7.0 Distributors

A distributor is defined as a supplier that procures parts, materials or assemblies and sells these products to a customer without affecting product characteristics or conformity. Distributors must employ a documented quality system that is compliant to (AS/EN/JISQ) 9120 Aerospace Requirements for Stock-list Distributors or (AS/EN/JISQ) 9100 Quality Management Systems / Aerospace / Requirements.

Copies of the AS standards can be purchased from SAE International at www.sae.org or IHS-ASTM Book of Standards - http://global.ihs.com/industry_stds.cfm.

8.0 Harlow Furnished Tooling

Harlow Tool Control will notify the supplier when periodic inspections are due. The notification will be transmitted by e-mail, facsimile or mail and consist of a list of the tools and the dates the inspections are due.

The supplier's authorized quality representative will date, stamp and sign the letter certifying the periodic inspections are complete and return the letter to Harlow Tool Control by e-mail, facsimile or by mail.

The supplier's quality representative will facilitate having the tooling and tooling log inspection stamped to note the completion of the periodic inspection.

9.0 Periodic Inspection of Tooling

The supplier shall ensure that tooling which controls or checks the final configuration of controlled parts and assemblies is inspected to ensure compliance to tool design, and master control tools at a minimum annually.

10.0 Part Identification *(When Required by PO/Contract Only)*

Parts that are not design controlled shall have the supplier part number applied. Part marking shall be accomplished by permanent ink stamping of the parts when the identification method is not specifically regulated by the drawings, specifications or other documents. Parts that are too small to be surface marked legibly tagged either individually or by the bundle.

11.0 Raw Materials

Where the supplier supplies raw material (e.g., bar, castings, extrusion, forging, plate, sheet, etc.) either directly to Harlow Aerostructures LLC or purchases the material for use in manufacturer of machined or sheet metal products for Harlow Aerostructures LLC (standard hardware items are specifically excluded from this paragraph), the supplier shall assure that the material is manufactured and distributed by sources approved by Harlow's customer.

Harlow's Quality Assurance must approve any substitution of material, size and/or shape.

All items delivered to Harlow Aerostructures LLC must maintain Job/Lot traceability.

Where our customer does not specifically require approval of the manufacturer and/or distributor of the raw material then:

Where the material is for use on commercial aircraft the supplier shall assure that the material is manufactured in the United States of America or in a country with which the United States of America has ratified a Bi-Lateral Airworthiness Treaty. For a list of countries with bi-lateral agreements consult FAA AC 21-18 and AC 21-23.

Where the material is for use on military aircraft and the material is considered a specialty metal (as defined in DFARS 252.225-7014), then the supplier shall assure that the materials are melted in the United States of America, its possession, or Puerto Rico unless supplier gains prior written approval through Harlow Aerostructures LLC from our customer for use of other sources.

Raw material test reports and/or notarized reports, in accordance with all applicable specifications, must be kept on file and traceable to end item products delivered to Harlow Aerostructures LLC.

Certificate of compliance with actual results of physical and chemical test reports must accompany each shipment where supplier furnishes the raw material.

Material must be identified by heat lot and/or heat treat load, (if applicable). Test reports must be traceable to the material lots supplied.

Supplier should contact Harlow's Quality Assurance for assistance in assuring the source of raw material supply is acceptable to Harlow's customers. Ref: Quality Clause Q4

12.0 Military/Standard Specification Hardware

Suppliers shall deliver military/standard specification hardware (AN, MS, NAS, etc.) compliant with the latest document revision. Supplier shall provide a certificate of supplier's source of supply where the product is controlled by a qualified producer's list (QPL) when the supplier is not on the QPL.

Where the supplier supplies hardware items (e.g., Bolts, Nuts, Nut-plates, Rivets, Loc Bolts, Hi-Locs, Collars, etc.) of standard design (whether industry or Harlow's customer standard) and the hardware is controlled by a qualified producer's list (QPL) the supplier shall provide a certificate of source of supply when the direct Harlow's supplier is not on the QPL.

Where Harlow's customer requires the distributor to be approved, then the supplier shall only use and or supply hardware from Harlow's customer approved distributor.

Supplier should contact Harlow's Quality Assurance for assistance in assuring the source of standard hardware items is acceptable to Harlow's customers.

13.0 Right of Access

The supplier guarantees the right of access to their facilities and quality related data to Harlow Aerostructures, LLC / Harlow's Customer and/or Regulatory authorities (FAA and/or DCMA). This right of access is extended to all sub-tier and raw material suppliers. Ref: Quality Clause Q12

14.0 Quality Records

The supplier shall establish a system to retain records for a minimum of ten (10) years after product shipment. Suppliers of serialized assemblies under Harlow's customers design control shall retain assembly inspection records and delivery records, including all bonded assembly inspection records.
Ref: Quality Clause Q9

Quality records include but are not limited to:

First Article Inspection Results	Purchase Order	Rework and/or Repair Logs
Final Inspection Criteria	Test Results	Raw Material Certification
Final Inspection Results	Shipping Documentation	Special Process Certification
Nonconforming Part/Material Documentation	Any Waivers Granted	Shop Traveler / Router / Planner

15.0 First Article Inspection

The supplier shall perform a first article inspection, on a part from each first lot shipment of parts, to verify all engineering characteristics. Variable gauging shall be used when possible. Suppliers shall comply with SAE-AS9102 Standard and this procedure for all First Article and/or Delta First Article Inspections.

1. SAE AS9102 Ref section 1.3 Application: The standard applies to organizations and their suppliers responsible for product realization processes that produce the design characteristics of the product. The organization shall flow down the requirements of this standard to suppliers who produce design characteristics.

2. The standard also applies to suppliers performing special process(es). A Certificate of Conformance (CoC) provided by processors attests to satisfying the requirements. External suppliers providing special process(es) can satisfy this standard's requirements by either:

    - Documenting the design characteristics and associated results on a First Article Inspection Report (FAIR).
    - Documenting the design characteristics and associated results on a detailed CoC.

3. AS9102 Standard requirements applies to assemblies, sub-assemblies, and detail parts including castings, forgings, and modifications to standard catalogue or Commercial-Off-the-Shelf (COTS) items. Each of these items shall have a separate FAI.

    1. Unless contractually required, this standard does not apply to:

        - Development and prototype parts that are not considered as part of the first production run.

        - Procured standard catalogue item, COTS, or deliverable software. When these items are included in an assembly, they shall be documented in the index of part numbers in an assembly FAIR.

The FAIR (First Article Inspection Report) shall be retained as a quality record at the supplier's facility, and a copy be submitted to Harlow Aerostructures, LLC along with the first lot shipment. If applicable, a Harlow source inspector may verify FAIR at the supplier's facility.
FAI requirements also include;

- If a 3D Models furnished by Harlow Aerostructures, the supplier is responsible for creating a 2D drawing and approval of the drawing through their Document Control process.
(Ref D6-51991 and MAA1-10009-1)

- Required information from the 3D Model on the 2D drawing minimum;

CUSTOMER:	CAGE CODE:	PART NUMBER:	2D REVISION:	
MODEL NUMBER:	CREATED BY:	APPROVED BY:	DATE:	SHT:

- A complete dimensional bubble drawing of the detail and/or assembly FAI part.

- Material Certifications (if applicable)

- Special Processing (If applicable)

- First Article Part shall be clearly marked/tagged FAI.

- Delta FAIR; First production lot after engineering changes and/or changes to manufacturing processes that may affect conformance to design, (Fit, Form or Function).

- Changes in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling or materials, numerical control program or translation to another media that can potentially affect fit, form or function. .

- In most cases, the Delta FAI Report needs only to record those features that may have changed using an AS9102 form latest revision. (Ref SAE-AS9102 Standard).

- A lapse in production for two years or more warrants a new FAIR. Ref: Quality Clause Q6

Note:
Follow the Guidelines of SAE AS9102 Standard except as shown on Example.

Note:
If Harlow P.O requires Manufactured Complete and requirements of purchasing of Raw Material and Special Processing, then AS9102 Form 2 shall be required as noted.

16.0 Nonconforming Material (Zero Defects)

"In order to make Zero Defects as standard business, we must Mistake Proof the Process."

Supplier shall submit all nonconforming material to Harlow's Quality Assurance for approval prior to shipping of the product. The supplier may use documents or supplier's documents to identify discrepant material. Supplier shall investigate the cause of each nonconformance, whether identified by supplier or by Harlow Aerostructures LLC.

The supplier shall establish corrective action to preclude the recurrence of the nonconformance. The supplier shall provide a statement of the cause and the corrective action to Harlow's Quality Assurance whenever the supplier is submitting a nonconformance for Harlow's approval.

The supplier shall provide a statement of the cause and the corrective action to Harlow's Quality Assurance within ten days whenever Harlow has identified a nonconformance to the supplier. Ref: Quality Clause Q7

16.1 Counterfeit Goods Prevention

For purposes of this section, work consists of those Goods delivered under this Contract that is the lowest level of separately identifiable items (e.g., articles, components, goods, parts and assemblies).

a. Seller shall not furnish to Harlow Aerostructures any Goods under the Purchase Order requirements that are "Counterfeit Goods," defined as Goods or separately-identifiable items or components of Goods that are an unauthorized copy or substitute of an Original Equipment Manufacturer or Original Component Manufacturer (collectively, "OEM") item(s) that are not traceable to an OEM sufficient to ensure authenticity in OEM design and manufacture and do not contain proper external or internal materials or components required by the OEM or are not constructed in accordance with OEM design, that have been re-worked, re-marked, re-labeled, repaired, refurbished, or otherwise modified from OEM design but not disclosed as such or are represented as OEM authentic or new or have not passed successfully all OEM required testing, verification, screening, and quality control processes.

b. Seller shall implement an appropriate strategy to ensure that Goods furnished to Harlow under the Purchas Order requirements and are not Counterfeit Goods. Seller's strategy shall include, but is not limited to, the direct procurement of item(s) from OEMs or authorized suppliers, conducting approved testing or inspection to ensure the authenticity of item(s) and when the item(s) are to be procured from non-authorized suppliers, obtaining from such non-authorized suppliers appropriate certificates of conformance that provide one or more of the following: the OEM's original certificate of conformance for the item(s), sufficient records providing unbroken supply chain traceability to the OEM or test and inspection records demonstrating the item's authenticity.

c. Counterfeit Goods delivered or furnished to Harlow that are deemed nonconforming and if the Seller becomes aware or suspects that it has furnished Counterfeit Goods to Harlow, Seller shall notify Harlow and replace at Seller's expense, such Counterfeit Goods with OEM or Buyer-approved Goods that conform to the requirements of Purchase Order.

Seller shall be liable for all costs related to the replacement of Counterfeit Goods and any testing or validation necessitated by the installation of authentic Goods after Counterfeit Goods have been replaced.

d. Seller bears responsibility for procuring authentic Goods or item(s) from their subcontractors and shall ensure that all such subcontractors comply with the requirements of this procedure.

16.2 RCCA - Root Cause Corrective Action Statement

Completing a QAF-021 Corrective Action Statement Form:

1. Brief Description of Nonconformance: *(or attach a copy of the NCR)*

2. Immediate Corrective Action:

This section should describe actions taken by the supplier to correct symptoms in the short term. Include information that ensures that the non-conforming condition has been corrected. The extent of non-conforming condition must be determined and contained.

The response must document that all parties involved have been informed of the problem. Also imperative is the determination of Direct Cause and development of the Direct Cause corrective action plan (what, who, where, how and date) that includes a schedule for completion, and verification of the effectiveness of Direct Cause Solution. Was there a Product Impact?

Effectivity:

The response includes the "Effectivity" (Date or Unit/Ship Number) of the next shipment when the same part or product will be shipped to the customer without the noted defect.

3. Root Cause Analysis:

The 5 Why approach - The root-cause statement(s) shall be a statement of fact and must address a basic systemic issue without any obvious "why" questions embedded in it. The root cause will focus on a single issue of the 5 why approach.

4. Corrective Action Plan:

The Root Cause Corrective Action Plan addresses the root-cause statement, establishes an implementation plan with dates and assigns responsibility for the completion of action plans.

The plan must reference evidence of revisions to policies, procedures, or work instructions, as well as affected supporting documents.

Root cause correction involves long-term prevention and process improvement rather than an immediate fix.

Effectivity:

Include the serial numbers (if applicable) or date (Effectivity) as appropriate, when the root cause corrective action will be complete.

5. Corrective Action Verification Plan:

Determine and include a plan to ensure the committed action has been implemented. This section indicates the supplier has verified or will verify that the root cause corrective action has been accomplished (who, where, when, how and date).

6. Follow-up:

Determine and include what will be audited to ensure the corrective action has been and continues to be effective in precluding recurrence of the nonconformance. Incorporate a schedule for completion of the audit.

If appropriate, a query addressing follow-up may be added to the annual audit questionnaire.

16.3 Foreign Object Damage Prevention Program

Supplier to maintain Foreign Object Elimination (FOE) Detection/Debris (FOD) Program (Reference NAS 412) adequate for the process, product or service being performed under the requirements of this PO.

17.0 Latent Defect Reporting

In the event a condition is discovered that affects previously delivered product, Harlow shall be notified of the condition in a timely manner. Notification shall be in the form of a letter addressed to the attention of the Harlow's Quality Department.

The letter must include all pertinent information concerning the condition (i.e. part numbers, serial number, quantities, time frame, description of condition, etc.) and the corrective action taken to prevent recurrence.

18.0 Quality Clauses

Assurance that the requirements of all purchase order notes or quality clauses are understood and implemented throughout supplier planning and clearly communicated to sub-tier suppliers for inclusion in their planning.

Suppliers shall obtain and comply with the latest released revision of Harlow Supplier Quality Clauses (HQA-01) referenced on Harlow Aerostructures, LLC Purchase Orders, available at www.harlowair.com.

19.0 Delivery Documentation

The supplier shall provide delivery documentation for each item delivered in accordance with the purchase order/contract. The contents shall include:

- Company Certifications of Conformance statement denoting acceptance of the product
- Identity of actual manufacturer (manufacture of origin) on the packing sheet if the end item manufacturer
- When performed, name and location of all special process suppliers including all sub-tier special processor(s), ref 6.0 Special Processors (Certifications Required)
- Part serial numbers, when applicable
- AS9102 First article inspection reports / Delta when performed
- Any other documentation required by purchase order or contract

Material certifications are required to be submitted with all part shipments if the material is purchased and furnished by the supplier. Suppliers are required to maintain a copy of the material certification records traceable to the product shipped to Harlow, Ref: 14.0 Quality Records.

20.0 Source Inspection

When source inspection is required by Harlow Quality Assurance Quality Clause - Qb shall be listed on the purchase order contract.

21.0 ITAR/EAR Control

Any technical data furnished by Harlow Aerostructures within the definition of the Export Administration Regulation (EAR) and/or International Traffic in Arms Regulations (ITAR) and is subject to the export control laws of the United States.

Export of this data by any means to unauthorized persons, as defined by these laws, whether in the United States or abroad, without an export license or other approval from the U.S. Department of Commerce or U.S. Department of State is expressly prohibited.