GENESYS AEROSYSTEMS
a Moog Company

# SUPPLIER QUALITY REQUIREMENTS MANUAL

Rev -, 07 Mar 2022

Contents

**REVISION HISTORY**

| Revision | Date | Description of Changes | Approvals |
|---|---|---|---|
| IR | 01 Jan 2022 | | S. Wilkins |

## 1.0 PURPOSE

The purpose of this document is to consolidate and communicate Genesys Aerosystems' quality and management system expectations and requirements to suppliers and distributors of parts and services. The latest revision of this document is available to view and download from the Genesys website under the Quality menu under the supplier's section www.genesys-aerosystems.com/quality-certification.

## 2.0 CONTENTS, SCOPE & RESPONSIBILITY

This document defines quality and management system requirements applicable when goods and services are procured to **Genesys Aerosystems** design authority Build-to-Print and Build-to-Specification part numbers. Unless otherwise explicitly stated in this document, these requirements also apply to Standard Catalog Hardware (COTS), Modified COTS, and Supplier IP[1]. These requirements do not apply to Genesys Aerosystems' indirect procurement of general supplies and services not used in the manufacture of Genesys products. This document comprises all the applicable requirements to all suppliers or partners who supply products related to Genesys Aerosystems' purchase orders. These requirements derive from either one or a combination of the following:

- **SAE ISO9001/AS9100** – Genesys being AS9100 certified and a customer contract requirement
- **Federal Aviation Regulations** – Genesys being a production approval holder for aerospace articles
- **Customer Contract Requirement** – Flowed down to Genesys approved suppliers

***NOTE 1:*** *Definitions of key terms are provided in Section 3.0 below.*

## 3.0 DEFINITIONS

The following terms used throughout this document are consistent with ISO9000:2015 and AS9100:2016 definitions.

**Acceptance Authority Media (AAM):** The means defined by the organization to document the status of outputs with respect but not limited to conformity, configuration, monitoring, and measurement requirements and identification throughout the product life cycle.

**Concession** – Written authorization from Genesys (S-TEC) Quality to the supplier to use or release a product that does not conform to the specified requirements. Waiver/concession and product quality escape differ concerning the point in time when a non-conformance is detected. The need for a waiver/concession is evident before delivery to the customer, while a product quality escape is identified after delivery to the customer.

**Counterfeit Part** – An unauthorized copy, imitation, substitute, or modified part which is knowingly mispresented as a specified genuine part of an original or authorized manufacturer.

**Critical Items** – Those items have a significant effect on the provision and use of the products and services; including safety, performance, form, fit, function, producibility, service life, etc.; that require specific actions to ensure they are adequately managed.

**Deviation** – A non-conformance or non-compliance with Genesys (S-TEC) requirements as defined on drawings, specifications, SQRM, PQRs, and any other purchase order flow-downs.

**Escape** (or Escapement) – Nonconformities (deviations from requirements) that were produced, not detected and remedied, and subsequently sent to the customer.

**Genesys Aerosystems / S-TEC** – S-TEC doing business as Genesys Aerosystems is synonymous with either Genesys or S-TEC, for this document either Genesys Aerosystems or Genesys will be used.

**Key Characteristics** – An attribute or feature whose variation has a significant effect on product fit, form, function, performance, service life, or producibility, that requires specific actions for controlling variation.

**Manufacturing Lot** – Defined as all parts manufactured at the same time from the same materials, or processed together through all operations, unless otherwise specified in the Genesys (S-TEC) drawing.

**Modified COTS** – COTS parts that have been altered to meet the design requirements of the assembly. The drawing will typically carry the following note or similar: MAKE FROM PART NUMBER _____. Alterations with this category exclude special processing requirements. Modification of special processing requirements for COTS hardware renders them Build-to-Print or Build-to-Specification parts.

**Procurement Quality Requirement (PQR)** – Specific requirements that are listed below each article on each supplier purchase order that is specific to each article of which some general requirements apply to all articles used in the manufacture of Genesys Aerosystems products.

**Product Safety** – The state in which a product can perform to its designed or intended purpose without causing unacceptable risk of harm to persons or damage to property.

**Special Requirements** – Those requirements identified by the customer, or determined by the organization, which have a high risk of not being met, thus requiring their inclusion in the operational risk management process. Factors used in the determination of special requirements include product or process complexity, experience, and product or process maturity.

**Standard Catalog Hardware or COTS** – Standard Catalog Hardware is defined as a part or material that conforms to established industry or national authority published specification, having all characteristics identified by text description, National/Military Standard Drawing, or catalog item.

**Supplier IP (Intellectual Property)** – Non-Genesys (S-TEC) design hardware that is neither COTS nor Modified COTS. Genesys (S-TEC) neither owns nor has access to design data. Functional test data is often delivered with the product as usually, Genesys (S-TEC) does not possess the inspection/test equipment necessary for validation.

**Voluntary Disclosure** – A requirement by the FAA to report on any article that escapes from the Genesys Aerosystems' quality system that requires RCCA which could potentially include a Genesys Aerosystems supplier as indicated in Title 14 CFR 21.137(n).

If Genesys does not define a term in any Genesys artifacts or flow-downs, then industry-standard definitions (https://www.sae.org/iaqg/dictionary) shall apply.

## 4.0 ORDER OF PRECEDENCE

In case of any conflict between this document and the purchase order, this document shall take precedence. Suppliers should read this document in conjunction with the purchase order. The purchase order cannot change design data, i.e. data on drawings, specifications, standards. If a Genesys purchase order flow-down contradicts or appears to invalidate design data, the supplier should request clarification before executing the purchase order.

## 5.0 REFERENCES

The following international standards are important references for the structure and content of the requirements stipulated in this document.

- AS/EN/JISQ 9100:2016 (QMS Requirements for Aviation, Space and Defense Organizations)
- AS/EN/SJAC 9110:2016 (QMS Requirements for Aviation Maintenance Organizations)
- AS/EN/JISQ 9120:2016 (QMS Requirements for Aviation, Space and Defense Distributors)
- AS/EN/SJAC 9145:2016 (Requirements for APQP and Production Part Approval Process)
- AS/EN/SJAC 9146:2017 (Foreign Object Damage (FOD) Prevention Program)
- AS/EN/SJAC 9102 (Aerospace First Article Inspection Requirements)
- AS/EN/SJAC 9138 (Quality Management Systems Statistical Product Acceptance Requirements)
- AS13000 (Problem Solving Requirements for Suppliers)
- AS13002 (Requirements for Developing and Qualifying Alternate Inspection Frequency Plans)
- AS13003 (Measurement Systems Analysis Requirements for the Aero Engine Supply Chain)
- AS13004 (Process Failure Mode and Effects Analysis (PFMEA) and Control Plan)
- AS13006 (Process Control Methods)
- AS1933 Age Controls For Hose Containing Age-Sensitive Elastomeric Material
- ASNT SNT-TC 1A Personnel Qualification and Certification in Nondestructive Testing
- ARP5316 (Storage of Elastomer Seals and Seal Assemblies ….)
- ANSI /ESD S20.20 (Protection of Electrical and Electronic Parts, Assemblies and Equipment)
- ASTM D3951 Standard Practice for Commercial Packaging
- BS/EN/ISO 9001:2015 (Quality Management System Requirements)
- BS EN 100015-1 (Protection of electrostatic sensitive devices)
- IPC-A-610 Acceptability of Electronic Assemblies
- IPC J-STD-001 Requirements for Soldered Electrical and Electronic Assemblies
- MIL-S-19500 General Specification For Semiconductor Devices
- MIL-STD-1595 Qualification Of Aircraft, Missile And Aerospace Fusion Welders
- MIL-STD-1686 (Electrostatic Discharge Control Program for Protection of Electrical …)
- NAS 410 NAS Certification & Qualification Of Nondestructive Test Personnel
- RTCA DO-178
- Title 14 Code of Federal Regulations Part 21 (concerning PAH for PMA or TSOA)

To access these standards:

https://www.iso.org/standards.html
https://www.ansi.org
https://www.bsigroup.com
http://quicksearch.dla.mil
https://www.astm.org/
https://www.sae.org/standards
https://www.sae.org/iaqg/publications/standards.htm
https://aesq.sae-itc.com/content/aesq-standards
https://www.ipc.org

## 6.0 QUALITY MANAGEMENT SYSTEM REQUIREMENTS

### 6.1 Quality Management System Certification and Approval

**The Supplier will:**

a) Establish a documented quality management system (QMS) that addresses Genesys and applicable statutory/regulatory requirements.
b) Work only within the scope of their QMS certification and/or the scope of the approval as communicated by Genesys.
c) Maintain a 3rd party / other party QMS approval for the following (as applicable):

**Genesys Supplier Contracts**

- Design / Production – AS/EN/JISQ 9100 or National Aviation Authority Approval Part 21.
- Maintenance – AS/EN/JISQ 9100 or 9110 or National Aviation Authority Approval Part 145.
- Stockists and distributors – AS/EN/JISQ 9120.
- Raw material manufacturers – AS/EN/JISQ 9100
- Inspection and testing – A2LA, NAVLAP, NADCAP, UKAS, NABL
- Testing and calibration laboratories – ISO/IEC 17025
- Special Processors – AS/EN/JISQ 9100 or NADCAP.

### 6.2 Control of Genesys Documents

**The Supplier will:**

- Comply with the current revision[1] [2] of Genesys documents/specifications referenced on the Genesys purchase order.
- Take appropriate action when Genesys document changes cannot be implemented before the shipment of the product (reference PQR 13).
- Flow down Genesys documents/specifications to sub-tier suppliers (when applicable). Suppliers, including dealers and distributors, are responsible for ensuring that the applicable requirements of the purchase order are imposed on lower-tier procurements for raw material, components, or process services being used in the manufacture of products or services being provided.
- Ensure that when Genesys documents are translated into a supplier's national language, the translation is performed by a competent translator before use.

***NOTE 1:*** *For all Military, Federal, Industry, Genesys customer specifications, and standards, unless specified on the contract or purchase order, the supplier may use either the latest specification or the specification in effect at the time of the PO. The raw material is excluded as older versions of raw material specifications are backward compatible. Genesys reserves the right to request a different revision of any specification, which would be specified on the purchase order.*

***NOTE 2:*** *Revision or issue number of all applicable Genesys/S-TEC specifications shall be verified against the latest Purchase Order and revision of the specific drawing or specification through Purchasing department (purchasing@s-tec.com).*

### 6.3 Control of Genesys Records

**The Supplier will:**

Control records[1] related to Genesys/S-TEC product in a manner that will allow the recovery of a readable version of any records (including electronic records) by ensuring that:

a) Records are retrievable upon request within 48hrs and provided to Genesys at no extra charge.
b) Documents/records requiring authorization by and/or submission to Genesys shall be written in the English language.
c) Records created by and/or retained by sub-tier suppliers are appropriately controlled following these requirements.
d) Hand-written amendments to records shall be dated and signed in ink with the original information being legible after the change.
e) Records shall be appropriately identified and managed following customer, regulatory, and company-defined requirements.
f) Storage, usage, and disposal of records is performed in a manner appropriate to their security classification and protected from unauthorized access and fraudulent use[2].
g) Storage facilities shall provide environmental conditions to prevent deterioration or damage and to prevent loss.
h) Either retain quality records for a minimum of (10) years from the date of shipment, unless a longer period is specified, and consult with Genesys before document disposal/record destruction or supply documentation with each shipment from original manufacturer (OEM).

***NOTE 1:*** *Records include but are not limited to: Approved Certificates of Conformity, Test Reports, Raw Material Certifications, Special Process Certifications, First Article Inspection Reports (FAIR), Route Cards/Travelers, and Calibration Records. If records cannot be maintained at the supplier facility then the records will be included with each shipment.*

***NOTE 2:*** *The nature of the information in the records, as well as its format, dictates the method by which they shall be destroyed. When records contain sensitive information (such as design detail, proprietary info, ITAR restricted info, etc.), they shall be disposed of by irreversible destruction methods such as shredding, or "erasure"/reformatting for electronic/magnetic media.*

### 6.4 Communication with Genesys

**The Supplier will:**

a) Notify Genesys Quality department of any quality escape immediately.
b) Provide Root Cause and Corrective Action (RCCA) when a Supplier CAR has been issued
c) Have any requested deviations or changes approved by Genesys Engineering and Quality department in writing (usually through a design change).
d) Notify Genesys Quality Department of any significant organizational changes, (refer to Section 8.3)
e) Submit a Supplier Nonconformance Disclosure form for review when a nonconformance has been discovered and receive approval before shipment.

## 7.0 MANAGEMENT RESPONSIBILITY

### 7.1 Management Commitment

**The Supplier will:**

a) Provide and maintain the resources required to comply with Genesys' purchase order requirements.
b) Focus on customer satisfaction with an emphasis on defect prevention, on-time delivery, continuous improvement, and ongoing risk management.
c) Establish a quality policy and quality objectives for the organization and ensure that quality planning and management reviews effectively consider how the organization is meeting customer requirements.

### 7.2 Responsibility, Authority, and Communication

❖This section does not apply to suppliers of COTS or Modified COTS.

**The Supplier will:**

a) Communicate to employees and sub-tier suppliers the impact of their work on product safety and conformity, and the importance of ethical behavior[1].
b) Ensure that within their organization and at subcontractors/sub-tiers, the use of Acceptance Authority Media[2] (AAM) for product release (refer to PQR 13) is clearly defined within the Quality Management System.
   - Suppliers shall maintain compliance with Genesys supplier requirements by assessing its process and supply chain as part of its internal audit activities, including but not limited to application errors, untimely use, misrepresentation, and training deficiencies.
   - Communication shall reinforce the importance of ethical behavior in daily activities. The use of AAM must be considered as a personal warranty of compliance and conformity.
   - Suppliers shall, upon the request from Genesys, be able to demonstrate evidence of communication to their employees and their supply chain.
c) Define the personnel responsible for product quality (across all sites and production shifts) and ensure that they have the following:
   - Authority to stop production to correct quality problems.
   - Organizational freedom and access to top management to resolve quality issues.
d) Establish a procedure, work instruction, or equivalent for task/shift handovers and general role changes that ensure all necessary information is communicated (verbally and in written form) between outgoing and incoming personnel.

***NOTE 1:*** *Products and services provided by Genesys are typically used in mission-critical applications where supplier product conformity can have an impact on the safety and well-being of people. Suppliers are required to communicate this to their employees and to their sub-suppliers to ensure the appropriate level of action and control.*

***NOTE 2:*** *Acceptance Authority Media are the means defined by the organization to document the status of outputs concerning but not limited to conformity, configuration, monitoring and measurement requirements, and identification throughout the product life cycle. Media include inspection stamps, electronic signatures, passwords, wet signatures, and any other means identified by the QMS.*
*Reference:* *https://www.sae.org/aaqg/audit_information/2017/minn/acceptance_authority.pdf.*

## 8.0 RESOURCE MANAGEMENT

### 8.1 Training and Competence

❖This section does not apply to suppliers of COTS or Modified COTS.

**The Supplier will:**

a) Establish a documented procedure for identifying training needs, achievement, and review of competence of all personnel performing work directly or indirectly impacting conformity to product or production process requirements.
b) Create role profiles/accountabilities and provide on-the-job training for personnel performing work directly or indirectly impacting conformity to product or production process requirements, including any new or modified jobs, contracts, or agency personnel.
c) Establish a business skills matrix to identify training requirements as well as identifying areas for succession planning and risk management/treatment to maintain continuity of supply.
d) Maintain records of training and competence for the period that the relevant employee remains within the supplier's organization.

***NOTE 1:*** *Suppliers on Vendor Schedule Purchase Orders (indicated on the Genesys PO) shall follow a formal documented method to ensure they are working to the latest version of all flow-downs and that they remain in compliance with Genesys requirements. Suppliers are required to work to the latest revision of all flow-downs (refer to Section 6.2).*

***NOTE 2:*** *All requests for clarification, waiver, or change of any Genesys/S-TEC requirement shall be submitted via email, and suppliers must not commence manufacturing Engineering and Quality (qa@genesys-aerosystem.com).*

***NOTE 3:*** *Suppliers shall not accept a purchase order or produce parts based on "red-line" drawings or any instructions other than officially released drawings/specifications. Suppliers should contact Genesys Purchasing for assistance with any questions or conflicts.*

### 8.2 Cleanliness of Work Place

❖This section does not apply to suppliers of COTS or Modified COTS.

**The Supplier will:**

Maintain its workplace in a state of order, cleanliness, and repair consistent with the product and production process needs[1].

***NOTE 1:*** *Tools such as 5S and Visual Management (9.4) should be used for workplace organization improvement. Refer to 9.5 regarding requirements for FOD prevention/detection for Genesys contracts.*

### 8.3 Business Continuity and Risk Management

❖This section does not apply to suppliers of COTS or Modified COTS.

**The Supplier will:**

a) Establish business continuity plans that identify, analyze, evaluate and/or mitigate risk related to business continuity that includes (but is not limited to) the following:

- Product, facility, or individual skill uniqueness.
- Access to alternative production facilities.
- Single points of failure (including sub-tier suppliers) or key process.
- Remote back-up of computer data, access to information systems.

- Action plans and timescales for business recovery.
- Contacts, process owners, and procedures to follow in the event of an emergency.
- A strategy to control, review and communicate plans to all relevant personnel.

b) Inform their Genesys purchasing contact[1] within five (5) working days regarding the following:

- Changes to third-party or other party certification status, including lapse, withdrawal, or major audit findings.
- Change of the nominated quality representative.
- Significant change to the quality management system.
- Change in ownership or discontinuation of business activities.
- Risks that could impact the continuity of the supplier's business/operations.
- Risks with the supply of substances used in the production or physical make-up of products, due to laws and regulations concerning the control or use of such substances that may be published from time to time.

c) Submit risk register and contingency plans to Genesys upon request.

***NOTE 1:*** *Notifications shall be submitted to Genesys following the requirements stipulated in Section 8.*

## 9.0 OPERATIONAL MANAGEMENT

### 9.1 Contract Review

**The Supplier will:**

a) Conduct contract and purchase order reviews for all purchase orders, by personnel having the relevant knowledge and experience.
b) Ensure the capability, capacity and resources are available to meet all Genesys requirements.
c) Review the requirements of drawings, specifications, SQRM and all Procurement Quality Requirements (PQRs), packaging requirements, and standard terms and conditions referenced on the Genesys purchase order.
a) Retain documented information on the result of the reviews and notify the Genesys purchasing contact of any instances where Genesys requirements cannot be met before production.

### 9.2 Receipt Inspection/Verification of Purchased Product

**The Supplier will:**

a) Have a receipt inspection process to verify that the purchased product meets the supplier's requirements, which shall include Genesys' requirements.
b) Ensure that required documentation has been provided with the purchased product that states the product meets specified purchase requirements
c) Maintain records of receipt inspection and supporting documentation per the requirements of Section 7.0.

### 9.3 Subcontractor/Sub-Tier Supplier Monitoring

❖This section does not apply to suppliers of COTS or Modified COTS.

**The Supplier will:**

a) Monitor subcontractor / sub-tier supplier performance through the following indicators:
   - Delivered product quality.
   - Customer disruptions / customer returns.
   - Delivery schedule performance.

b) Conduct load and capacity reviews with key subcontractors / sub-tier suppliers annually or following significant load increases.

c) Take appropriate corrective action with poorly performing subcontractors / sub-tier suppliers.

d) Maintain records of subcontractor / sub-tier supplier monitoring per the requirements of Section 7.0.

### 9.4 Manufacturing Process Control

❖This section does not apply to suppliers of COTS or Modified COTS.

**The Supplier will:**

a) Maintain a traveler, router, process flow sheet, or equivalent control mechanism that directs procedures for the control of quality and configuration through all stages of production.

b) Develop inspection procedures and control plans, and maintain records of inspection that include evidence of inspection for all features (e.g. first article inspection, acceptance test data) of products/processes supplied to Genesys, showing the product has been inspected and/or tested during all stages of manufacturing, identifying the name of the individual (i.e. with stamps, etc.) who certified the results, and where applicable includes the results of the inspections and tests.

c) Ensure that 100% of all features on all parts produced are following the Genesys requirements. This shall be accomplished by the following minimum requirements:

   - Understand and reduce variation within processes, by using SPC and control-charting techniques and/or appropriate inspection. Suppliers using sample inspection plans remain responsible for all attributes on the part/assembly.
   - In-process inspection shall occur throughout the processing of a *manufacturing lot*.
   - The method of inspection shall be suitable and capable for each type of feature or inspection being performed. For example, measurement instruments should have 10 times the resolution of the tolerance being measured.
   - Parts shall be 100% visually inspected for loose or hanging burrs, machining chips, handling damage, and FOD (Foreign Object Debris) before shipment.

d) Ensure that calibration of measuring and test equipment used for product acceptance is performed and is traceable to established international or national measurement standards (e.g. BSI, NIST, UKAS, etc.). Procedures for periodic calibration, certification, maintenance of tools and equipment, and an action plan, should measuring and/or test equipment be found to be out of calibration, shall be established and followed. The action plan shall contain, as a minimum, item identification (model, manufacturer, and serial number), found condition (including span/range and accuracy), date condition found, date of the previous calibration, notification details, and any other pertinent measurement details.

e) Ensure that parts subjected to machining and special processes, and selected other build-to-print parts, must meet the workmanship standards and requirements defined by Genesys.

- In general, parts shall have a consistent appearance concerning color, texture, machine marks, etc. unless allowed by the drawing, specification, workmanship/visual standard. Parts shall also be free of random marks, blemishes, or touch-ups unless allowed by the specification, drawing, workmanship/visual standard.
- Questions regarding specific appearance concerns should be submitted to Genesys Engineering (6.4) via email with the appropriate detail (problem description, pictures, cause, recommended actions, etc.)

f) Establish a visual management process/system that will provide feedback to everyone involved in the process regarding status, the flow of work, priority, and the performance of the process, facilitating timely problem diagnosis and effective intervention.

### 9.5 Foreign Object Debris (FOD)

❖This section does not apply to suppliers of COTS or Modified COTS

**The supplier will:**

a) Maintain a Foreign Object Debris/Damage (FOD) control program following the requirements of AS9146 available from https://saemobilus.sae.org/content/AS9146

b) Shall use appropriate tools/techniques to manage part-level FOD risk throughout the manufacturing process.

c) Ensure that all incidents of actual or potential FOD are reported, investigated, and corrected.

### 9.6 Storage Identification and Traceability

**The Supplier will:**

a) Provide secure storage facilities for products, equipment, tools, and material. Ensure the conditions of storage prevent deterioration and damage of stored items. Assess the condition of the product in stock at appropriate planned intervals to detect deterioration.

b) Ensure that individual articles and materials and lots thereof are always identified and segregated from all other articles, materials, and lots. Ensure segregation of serviceable products, equipment, tools, and material from an unserviceable product, equipment, tools, and material.

c) Records for articles shall indicate the part number, revision level, lot number, and if applicable the serial number and associated detailed information.

d) Records for materials shall indicate type, applicable serial numbers, manufacturing lot numbers, heat numbers, batch, date code, cure date, etc.

e) Material or articles furnished by Genesys for outside operations must remain identifiable by the Genesys supplied lot or serial number. This number must be recorded on all applicable supplier paperwork.

### 9.7 Part Preservation, Packaging, and Delivery

**The Supplier will:**

a) Ensure that the packaging and preservation are adequate to protect the products during transportation, handling, and storage. In general, packaging containers shall be

appropriate for the size, weight, and fragility of the products being packed, and shall ensure there is no metal-to-metal contact of finished features.

b) Ensure that preservation methods will allow storage without degradation/corrosion for a minimum of 12 months from the date of receipt.

c) Use part separation dividers or unitized packing to prevent part to part contact or packaging damage.

d) Ensure that different manufacturing lots of the same part number are not mixed within a package.

e) Each manufacturing lot shall be clearly identified and segregated in separate packages[1].

f) Ensure that packaging labels contain the following information: date of shipment, purchase order number, part number, and quantity in both numerical and barcode 3 of 9 formats.

g) h) Label fragile packages as such.

h) Clearly mark the shelf life/expiration date on the packaging and the shipping paperwork for material with shelf-life requirements.

i) Ensure that all chemicals are accompanied by a relevant Safety Data Sheet (SDS) (formerly called Material Safety Data Sheet (MSDS)) with each shipment.

j) Communicate with Genesys as necessary, to establish other appearance, packaging, and preservation techniques required.

***NOTE**: See PQR 1 in Section 9.8 and ref: ASTM D3951*

### 9.8 Procurement Quality Requirements (PQR)

The supplier including manufacturers and distributors shall follow Genesys Procurement Quality Requirements (PQRs) during the fabrication of all parts, subassemblies, assemblies, and tooling involved in the manufacturing, distribution, and shipping of Genesys products. The supplier must retain on file evidence of conformance in the English language by either hardcopy or electronic for 10 years. This requirement is due to contractual obligations with Genesys Customers - If traceability cannot be kept at the supplier facility then copies must be sent in with each shipment received by Genesys.

By shipping the product to Genesys Aerosystems, suppliers confirm that the product meets or exceeds all applicable Genesys engineering and/or purchase agreements, purchase orders, functional test requirements, and/or supplier design control documents. The supplier is also responsible for ensuring sub-tier supplier-produced parts, components, or services conform to Genesys approved design data. Certification with ISO9001 or AS9100 standards is preferred for all suppliers, but as a minimum, suppliers must meet Genesys' requirements listed on the Supplier Evaluation form. For questions concerning PQR's, please contact a Genesys Quality representative at Extension 7744.

***NOTE**: Some PQRs listed on a Purchase Order may not necessarily be applicable for a given shipment.*

**Example**: PQRs noted on a PO and bracketed with parenthesis, are a point of emphasis for the supplier to pay attention to the criteria details. Given some circumstances, the PQRs may or may not apply to that specific lot of parts (i.e., an FAI report would not be needed if none of the noted criteria of PQR 3 apply).

**PQR 1– GENERAL REQUIREMENTS**

**Certificate of Conformance**: The Supplier is to provide a certification of conformance document which shall include the following information:

a) Supplier Name;
b) Supplier Address;
c) S-TEC Name;
d) S-TEC Purchase Order Number;
e) Part Number Listed On the Purchase Order;
f) Revision Number / Letter Listed On the Purchase Order[1];
g) Serial Number(s) / Lot Number As Applicable;
h) Quantity of Parts Certified On This Shipment; and
i) Fasteners included under the Fastener Quality Amendments Act Of 1999 (PL-106-34) shall provide appropriate certification.

***Note 1:*** *Providers of commodity parts/components (typically distributors) are exempt from the Revision Number/Letter requirement. Commodity refers to a class of parts/components that are standard-issue and are widely available for purchase, but present difficulties in the differentiation of similar products from competitors. (i.e. fasteners, resistors, etc.)*

**Protection of Material-Preservation, Packaging, and Shipping:**

The Supplier shall ensure adequate control of packaging, preservation, shipping, and handling of products to prevent damage, deterioration, and/or loss. Shipments consisting of multiple containers shall have each container identified 1 of 4, 2 of 4, etc. All documentation will be placed in container #1 and marked “Documentation Enclosed”, reference ASTM D3951.

**Container / Package Identification of Procured Item(s):**

The container(s) the parts/material are delivered to Genesys in shall have a label affixed that identifies the contents by the manufacturer’s part number. In turn, that part number can then be verified as the correct part/material by comparing it against that noted on the Purchase Order and the accompanying Certificate of Conformance (C of C).

Genesys Aerosystems is committed to preserving the environment and is requesting that all materials used in the shipment of product to Genesys, or any of its subcontractors, be kept at a minimum to ensure adequate protection during transit and be composed of ecologically friendly materials.

All items subject to Electrostatic Discharge damage shall be packaged in a manner consistent with MIL-STD-1686 for ESD.

**Nonconforming Product**:

A supplier must notify Genesys of any material that does not conform to specifications/drawings approved by Genesys. Material Review Board (MRB) authority is not delegated to the supplier. If Genesys agrees to let the supplier ship nonconforming material, it will be annotated on the Purchase Order but does not necessarily constitute acceptance of the material by Genesys.

**Inspection by Buyer:**

All work performed shall be subject to inspection, surveillance, and test by Genesys, the FAA, and/or a customer/government representative at any time, including all points of manufacture, parts, materials, inspection records, and inspection/testing equipment normally used in production and inspection of the Genesys parts/materials. This report does not relieve the Supplier of the obligation to furnish items meeting the applicable drawings, specifications, work instructions, and contract requirements.

Inspection by the Genesys quality representative or other parties does not constitute final acceptance of parts and/or material.

At Genesys Aerosystems' option, Source Inspection may be waived at any time during the life of the order.

**Notification of Changes to Supplier Organization, Location, or Certification Status**:

The supplier shall notify Genesys of organizational changes affecting quality management, supply chain management, or ownership within 10 business days of the change. A location change (see PQR 3) or certification status, as well as significant organizational changes, may constitute an on-site visit from Genesys.

**Mercury Contamination (As applicable)**:

The supplier shall certify that all parts, pieces, items, etc., supplied to Genesys on this Purchase Order do not contain functional mercury or its compounds in any form, and no mercury-bearing instruments and/or Equipment that might have caused mercury contamination have been used in the manufacture, fabrication, assembly, or testing of the delivered products.

**Supplier's Responsibility:**

By acceptance of this purchase order, the supplier attests that all inspection personnel are properly trained on inspection methods, tools, and inspection procedures and assures that persons are aware of:

- Their contribution to product or service conformity;
- Their contribution to product safety;
- And the importance of ethical behavior

**PQR 2 – TRACEABILITY**

The supplier shall maintain at their facility complete traceability of origin to delivery of items written in the English language for a minimum duration of ten (10) years. The traceability shall be documented and available upon request either by hardcopy or electronic. If traceability cannot be kept at the supplier facility then copies must be sent in with each shipment received by Genesys. Supplier shall serialize items as required by drawings, specifications, and/or the purchase order. Serial numbers shall not be duplicated. Supplier's quality system shall ensure traceability of all serialized and or date-coded items and materials to the original materials.

In addition to the Certificate of Conformance (C of C), the following will be required:

**PCB Board Assemblies:** supplier shall tag the board assembly with the following information:

a) Purchase order number;
b) The part number and revision level;
c) PL number and revision level;
d) Unique serial number; and
e) Date of manufacture.

**Distributors:** The Supplier shall implement an appropriate strategy to ensure that articles delivered to Genesys are not counterfeit. The Supplier's strategy shall include but is not limited to, the direct procurement of articles from the Original Equipment Manufacturer (OEM) or other authorized Suppliers, conducting approved testing or inspection to ensure their authenticity.

Document requirements for Distributors are as follows:

a) The OEM's original certificate of conformance for the article;
b) Sufficient records providing unbroken supply chain traceability to the OEM; or
c) Tests and inspection records demonstrate the article's authenticity.

Counterfeit articles delivered or furnished are deemed nonconforming. If the Supplier becomes aware or suspects that it has furnished counterfeit articles to Genesys Aerosystems, the Supplier shall promptly notify Genesys Aerosystems and replace, at Supplier's expense, such counterfeit articles with OEM or buyer-approved conforming articles. The Supplier shall be liable for costs

related to the replacement of counterfeit articles and any testing or validation necessitated by the installation of authentic articles after counterfeit articles have been replaced. The remedies contained in this section are in addition to any remedies Genesys may have at law, equity, or under other provisions. The Supplier bears responsibility for procuring authentic articles or items from its subcontractors and shall ensure that such subcontractors comply with these requirements.

**Raw Material Traceability:** The Supplier shall maintain a material traceability process that ensures full traceability to the raw material lot/heat lot and any applicable requirements imposed by the drawing or specification. The Supplier shall ensure that the certifications provided include the actual material, special process, or testing standards noted on the applicable drawings along with the applicable revision letter or identifier. Mill certifications are required for metallic raw materials used in the manufacturing of hardware specifically designed, fabricated, or altered for the program. Mill certifications must contain the actual chemical and physical properties demonstrating compliance to the governing specification. For aluminum "typicals" is acceptable for the reporting of chemical properties.

**Chemical Test Actuals:** Reported results must be identifiable with test parameters, test methods, specifications, and material(s) to product(s) delivered. Reports must bear the date and signature of a responsible representative of the agency performing the test(s) along with traceability to the Genesys Aerosystems Purchase Order Number. The specifications must be listed, including the revision letter(s) or revision number(s) and amendments. Test specimens used for material verification tests shall be selected from, and traceable to, each delivered heat/lot of material.

**Physical Test:** Reported results must be identifiable with test parameters, test methods, specifications, and material(s) to product(s) delivered. Reports must bear the date and signature of a responsible representative of the agency performing the test(s) along with traceability to the Genesys Aerosystems Purchase Order Number. The specifications must be listed, including the revision letter(s) or revision number(s) and amendments. When parts are serialized, serial numbers must appear on the report(s).

**PQR 3 – First Article Inspection (FAI)**

The Supplier is to complete an FAI report on any manufactured parts meeting the following guidelines:

- The initial submission of a part by a newly approved supplier;
- A new part number was released to an approved supplier;
- A two-year interval between the date of manufacture (DOM) to an approved Supplier will necessitate a new FAI, even if the Supplier has built the part to the same revision level, previously;
- A revision level change to the drawing will necessitate an FAI. (Delta First Article acceptable);
- Any changes in the supplier manufacturing process or location[1]
- Genesys-owned tooling that has been modified or upgraded will require an FAI submission;
- A specific request for an FAI by Genesys (denoted in purchase order special instructions).

The report will be performed on a minimum of one part, with the part(s) being tagged in such a manner to indicate the FAI was completed against that specific part(s).

The supplier shall prepare and submit for review by Genesys Aerosystems, a first article using the SAE AS9102 format.

***Note 1**: See PQR 1 – Notification of Changes to Supplier Organization, Location, or Certification Status.*

**PQR 4 – FAA Documentation**

FAA Form 8130-3 (or JAA Form One) is required for all articles in this order.

**PQR 5 – Shelf Life**

Submit with each shipment a certification or statement, specifying maximum shelf life and expiration/cure date. A minimum of 75% of the applicable material shelf life shall remain upon receipt by Genesys. Rubber cure dated items shall be marked with a cure date, e.g., “1Q92”, per SAE-AS1933 and referenced Military Specification therein as applicable.

**PQR 6 – Inspection / Acceptance Test Data**

The supplier shall provide documented measurement data and/or test data with each shipment submitted to Genesys. The actual measurements obtained shall be outlined in the detail specification/drawing and reflect the proper revision level. Genesys reserves the right to specify the applicable data collection to be used. Test data shall include actual readings taken including actual characteristics/parameters tested. Test data sheets will be validated by an authorized contractor representative by signature or stamp.

**PQR 7 – Special Processes**

Any of the following special processes applicable to your product/service shall be performed by qualified personnel or sources:

**Material Certification, Physical and/or Chemical Test Reports**:

Each shipment is to include material certifications, with physical and/or chemical test reports in conformance with the latest specification revision or as defined by the drawing or purchase order. Certifications shall include the mill name and heat number. Certification must be complete, legible, reproducible, and authentic. The name and title of the authorized representative and date shall appear in type on the certification and bear the signature of that person along with the date.

**Process Certifications**:

Each shipment is to include process certifications with the required equipment and personnel identification number with the latest revision as required by the purchase order, process sheet, and/or drawing. Certification must be complete, legible, reproducible, and authentic. The name and title of the authorized representative and date shall appear in type on the certification and bear the signature of that person along with the date.

**Certification Welding**:

Certifications reflecting title and authorized signatures for the items are required with each receipt.

a) Welding is accomplished following the applicable engineering specifications.

b) Certification and identification of welding personnel.

c) Certify welding procedure specifications and qualification records conform to MIL-STD-1595.

d) Conformance and traceability of weld filler material.

**PCB Requirements:**

PCB suppliers shall build all assemblies following Genesys Engineering specification 05193. The criteria listed in the specification shall apply to all PCB assemblies unless otherwise specified on the associated engineering documentation. The supplier shall not deviate from this criteria unless written approval from Genesys is received. The supplier shall provide documented evidence of conformance with each shipment.

Printed Circuit Board Assemblies (PCBAs) shall be manufactured and certified to the following:

a) Solder composition of 63% Sn and 37% Pb (unless otherwise specified on the engineering documentation, or Approved by Genesys through the purchase order contract;

b) PC Board Assembly Engineering Specification criteria shall comply with that of Genesys or S-TEC drawing number 05193 (compliant to IPC-A-610 and IPC J-STD-001, Class 2).

**PQR 8 – Nondestructive Testing (NDT)**

**Personnel Certification:**

Personnel performing NDT acceptance testing operations shall be certified to Level II, or III.

All personnel certifications shall be following either (a) or (b) below.

a) NAS 410

b) ASNT SNT-TC 1A

**Radiographic Inspection**:

A report that reflects the supplier's interpretation of the acceptance of the articles to the standards shall be submitted with each shipment.

**PQR 9 – Calibration Services**

Contractors performing calibration services for Genesys shall use equipment that has been calibrated and maintained using standards that are traceable to the National Institute of Standards and Technology (NIST), following the latest revisions of ANSI/NCSI, 2540-1, Calibration System Requirements.

**PQR 10 – Government Source Inspection**

Government inspection is required before shipment from your plant. Upon receipt of this order, promptly notify and furnish a copy to the Government representative normally servicing your plant. So that government inspection can be appropriately planned. If a Government representative does not service your plant, contact the nearest Air Force, or Navy Inspection office. If you locate the Government office, our purchasing agent should be notified immediately. Notice to the Government shall be given 24 hours before shipment and Genesys shall be advised immediately following the supplier's notification to the Government.

**PQR 11 – Qualified Product List (QPL) / Government Requirements/Jan Semiconductor**

Items to be furnished on this Purchase Order apply to a Government or customer Qualified Product List. Manufacturers listed must be selected as sources of supply. All JAN devices shall meet the requirements of MIL-S-19500. A Certificate of Traceability shall accompany each device shipment. The document shall include the information specified in MIL-S-19500 Paragraph 3.3.1 (a) or 3.3.1 (b), as applicable.

**PQR 12 – Dock-To-Stock**

Parts/materials shall be packaged and marked according to the Dock-to-Stock agreement.

**PQR 13 – No Change Policy**

Previous Genesys / S-TEC approved processes and materials identified in manufacturing procedures submitted shall remain at the level of configuration in effect at the time of written approval by Genesys. The supplier shall not change processes, materials, manufacturing procedures, and/or sub-tier suppliers unless written approval from Genesys is received.

**PQR 14 – Software Requirements (as applicable)**

Airborne Software-The supplier shall maintain at their facility a software process based on the RTCA DO-178 document or equivalent. Documentation verifying this process shall be available upon request. Any software delivered shall be traceable to a release process that identifies the software as FAA-approved software for the purpose it was delivered for.

**Product Acceptance Software** – Any delivered software used in the testing of airborne software shall be traceable and reproducible by the supplier. Documentation verifying the testing the product acceptance software underwent shall be available upon request.

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Questions concerning the above-listed requirements can be directed to *qa@genesys-aerosystems.com* and current copies of this document are located on the company's website *genesys-aerosystems.com*.

The supplier acknowledges Genesys Aerosystems' commitment to the environment and our environmental policy located at the company's website *www.genesys-aerosystems.com.*