Quality Clauses

REVISION HISTORY

Revision	Date	Author	Description
Rev B	11/05/2025	Jenna Meyerson	Initial release of document; Supersedes 2.PQA.020-001

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1. INTRODUCTION

This document provides details of quality clauses (Q-Clauses) flowed down on a Purchase Order (PO). Clauses have been grouped for purposes of encouraging sellers to review all of the applicable requirement documents, including the Terms and Conditions, that accompany each PO. Each group has a heading that describes the overall purpose of the grouping. Most of the Q-Clauses now include background information.

NOTE: The background information is not intended to include requirements but to provide insight into the reason for the Q-clause.

For purposes of these Q-clauses, GA-ASI shall be referred to as "Buyer". The term "seller" as used herein, shall mean supplier, seller, or other entities selling product or services to Buyer.

2. HELPFUL LINKS

2.1 GA-ASI SUPPLIER PORTAL/WEBSITE

This is a link to the GA-ASI Supplier Portal. http://www.ga-asi.com/suppliers. You can find a number of documents and email links.

2.2 INTERNATIONAL AEROSPACE QUALITY GROUP (IAQG)

This is a link to the IAQG website referenced later in this document. http://www.iaqg.org

2.3 TERMS AND CONDITION SITE

This link takes you to the GA-ASI Terms and Conditions Page. http://www.ga-asi.com/terms-and-conditions. Some of the Q-Clauses refer to the GA-ASI Terms and Conditions.

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4. QUALITY CLAUSES

QA - QUALITY CLAUSES THAT MAY APPLY TO ALL PRODUCTION ORDERS

Unless QZ002 is invoked, all of the following Q-Clauses, beginning with "QA" are applicable to all materials and can be applied to any product PO. These may also be applied in support of flight, flight test, or customer deliverables.

QA001. Quality System

BACKGROUND: An acceptable quality system is essential for doing business with Buyer. It provides the infrastructure and procedure for consistent, sustained, acceptable quality. Additionally, Buyer, either through self-direction or as required by its customer, needs the ability to review records, data, inspection methods and manufacturing processes as a result of issues or customer requirements to assure sustained quality of parts being provided. This clause includes a provision for ensuring access to review, audit, assess and verify, as necessary.

The Seller and Seller's suppliers shall have and maintain a quality system(s) acceptable to the Buyer. The Buyer has the right to access and verify said system(s) through on-site audits and/or assessments.

QA002. Advance Notification of Potential Product Issue

*BACKGROUND: Issues, known by sellers but not effectively communicated to Buyer, cause non-conformances and customer dissatisfaction. Lack of information from sellers and sub-tier suppliers related to upstream issues prevents expected product quality or reliability, on-time shipment of orders, and timely fulfillment of requirements. Buyer may request further action such as use of the Supplier Disposition Request (SDR) or other processes as a result of notifications. This is an **advanced** notification of **potential** issues.*

In the event the seller is, or becomes, aware of a potential product problem or issue that may have an adverse effect on the quality, reliability, or delivery of a product to Buyer, the seller shall immediately notify the Buyer Supplier Quality Engineering (SQE) Department at DL-AS-SQE-Group@ga.com and the applicable Buyer procurement representative. This is an advance notification of potential issues. The following are examples of, but are not limited to, issues requiring notification: unplanned events, weather related events, major manufacturing issues, supply chain related events.

QA003. Certificates of Conformance (COC)

BACKGROUND: Certificates of conformance (COC) provide to Buyer an acknowledgement from seller that the seller has reviewed, understands, and meets all requirements of the PO. It means any questions about any requirements have been resolved. It assures Buyer that seller has procured, manufactured, processed and/or tested the purchased product as expected by Buyer in accordance with these Q-clauses and as otherwise agreed to in the PO.

The Seller shall furnish a COC with each lot/heat code/etc. delivered certifying that each item of hardware and/or software conforms to all requirements of the Buyer's specification and PO and that all required test and inspections have been satisfactorily performed. At a minimum, COCs

shall include:

1. Seller's name
2. Buyer Part number and dash number as listed on the PO.
3. Seller Part number if listed on the PO
4. Manufacturer name and part number if listed on the PO
   NOTE: Substitutions for parts listed on the PO are prohibited
5. Buyer Drawing revision level (when applicable)
6. Buyer Purchase Order (PO) number
7. Statement attesting that goods and services are of the quality specified and conform to the PO requirements, including specifications, drawings, specified raw and purchased materials, preservation, packaging, packing, marking requirements, physical item identification, and applicable Government and Buyer specifications, or equivalent wording.
   Note: For Distributor items, the requirements are verification of OEM and OEM Part Number
8. If a Supplier Disposition Request (SDR) applies to a PO/Line Item, include applicable Buyer approved GS-type QN Number resulting from any SDR on the C of C. A copy of the GS QN may also be attached. It is prohibited to mix parts in a shipment covered under a SDR with parts not covered under the SDR.

   It is preferred to have a printed name, date, signature, or stamp, of the seller's authorized representative on the COC. Pre-printed or electronic signatures are acceptable.

QA004. Seller Sub-Tier Supplier Management

BACKGROUND: Sellers are required to manage their suppliers. This clause provides guidance and minimum requirements for assuring product requirements are appropriately flowed throughout the supply chain.

Seller shall have processes and procedures in place to manage their entire supplier base. The International Aerospace Quality Group (IAQG) Sub-Tier Assessment Matrix (https://scmh.iaqg.org) is acceptable guidance for sub-tier management processes and procedures.

Seller shall ensure that all Buyer requirements, applicable to the product procured, are fully contractually flowed down through all levels of seller's supply chain for product being delivered to Buyer. Sellers should maintain an Approved Supplier List and shall have controls in place to ensure work is not performed at unapproved or disapproved sources. Sub-tier suppliers should have an adequate quality management system, as determined by the seller's assessment. It is preferred that sub-tier suppliers are NADCAP, AS9100 or ISO9001 compliant or certified via a recognized third-party Certification Body.

QA005. Seller Corrective Action

BACKGROUND: When either seller or Buyer Identifies an issue, containment, investigation, or other similar requirement, seller shall promptly perform the required corrective action. This clause is needed to ensure that the seller has a system that works effectively, expeditiously and prevents current or future production or deliveries of product with non-conformances.

Seller shall maintain an efficient and effective corrective action system that prevents shipment of nonconforming products without prior written approval from Buyer. In response to a Buyer-initiated Corrective Action Preventive Action (CAPA) request, seller shall advise and deliver to Buyer in writing and in a timely manner the following:

1. Provide and fulfill containment plan within three (3) working days of receipt of the corrective action request.
2. Root Cause (RC) determination (along with method of determination), acceptable to Buyer, within thirty (30) calendar days of issuance of the corrective action request (or if receipt of returned defective hardware is agreed to by SQE).
3. Written Corrective Action Plan (CAP), acceptable to Buyer, including actions to be taken, dates of implementation, and criteria for verifying effectivity. Additionally, similar products shall be evaluated for these corrective actions. Such CAPs shall include results of the evaluation. The CAP shall be submitted for written approval by Buyer SQE representative within ten (10) working days of delivery of the RC determination.
4. Verification of Effectiveness (VOE) Report. The VOE Report shall include the criteria for acceptance, the expected results, and the actual results observed. The VOE Report information shall be included in the CAPA response.

Buyer may issue an extension on an exception basis provided sufficient written justification is provided. Extensions may be granted for any corrective action phase provided the extension is requested prior to the due date of that phase.

Buyer reserves the right to perform source inspection and/or reviews until Buyer is satisfied that the accepted CAP has been effectively implemented.

QA006. Nonconforming Material

BACKGROUND: This clause conveys the expectation that the seller shall have a documented system and procedure for handling non-conforming product whether or not the seller is certified to a standard QMS (AS9100 or ISO9001). The system and procedure ensure that product with non-conformances does not get shipped to the Buyer through intermingling, lack of investigation, or lack of a disposition process that ensure approval for certain conditions.

Seller shall utilize a documented system and procedure for evaluation and disposition of non-conforming material to contain, track, analyze, determine root cause, and ensure effective preventative/corrective action implementation. Seller shall maintain a procedure to control the identification, documentation, evaluation, disposition, and segregation requirements of non-conforming products.

Seller's non-conformances that affect form, fit, function, reliability, maintainability, and safety shall not be given a disposition of "use as is" or "repair" through seller action without Buyer written approval. Rework to print will be acceptable. If seller determines a non-conformance or has reason to believe a non-conformance could potentially exist in previously delivered product, seller shall notify Buyer procurement representative within 48 hours of seller discovery. In addition, seller shall provide a written notification to Buyer including a description of the suspected nonconformance, potential safety risk or product impact, contract and/or PO number, Part Number, National Stock Number (NSN), and affected serial numbers, or lot numbers.

Seller shall notify Buyer of any non-conforming products Seller wishes to ship via the Supplier Disposition Request (SDR) process. Seller shall not ship parts until Buyer provides written authorization. Seller shall include the GS QN resulting from the SDR on the C of C when non-conforming part(s) are shipped. A Copy of the GS QN may also be attached. The affected parts shall be clearly identified with the GS QN number.

QA007. Authorized Special Process Providers (Nadcap)

BACKGROUND: A Special Process is defined as a manufacturing process where at least some quality requirements/characteristics by the resulting output cannot be verified by subsequent monitoring or measurement. The requirements described herein will help ensure the special processes performed on our product are controlled and monitored for compliance since the material cannot be.

This clause is applicable if one or more special process specifications are indicated on the engineering drawing associated with this PO line item, including all lower-level detail components. GA-ASI special processes are defined on Form 2.OPD.013-001, available at https://www.ga-asi.com/suppliers/terms-and-conditions under the "GA-ASI Process and Training Specifications" section.

This requirement applies to first-tier suppliers with internal special process capabilities as well as sub-tier special process suppliers. This requirement applies to all special processes referenced within the process specification. For example, if AWS D17.1 is called on the drawing, the associated NDI required is also a controlled special process.

All special processes shall be performed by suppliers who are currently Nadcap certified for the specific special process(es) being performed. If the special process is being performed per an industry specification on Form 2.OPD.013-001, that specification must be listed within the supplier's Nadcap scope of accreditation. If the special process is being performed per a GA-ASI engineering specification, the supplier only needs to be Nadcap certified to the overall process. Nadcap certified processors, and the specific processes they are certified for can be found at www.eauditnet.com.

Seller and Seller's sub-tier suppliers shall submit a Special Process Certification listing the following related to the special process(es) with each shipment:

1. Seller and/or its sub-tier supplier name details
2. PO number under which the parts were processed
3. Part Number and Revision
4. Special process performed including specification or standard used

NOTE: Seller may provide a summary of the above process details for assemblies in lieu of submitting individual process certs. Special process verification testing results noted in the specification shall be retained and made available to Buyer within three (3) working days of Buyer's request, or with shipment if required per Purchase Order.

On an exception basis only, Seller may request that a special processor, who is not Nadcap certified, be added to the list of GA-ASI approved processors using Form 2.SAM.004-005. This must be completed and approved prior to using this supplier for special processes. On the Certificate of Conformance (CoC), the seller shall list the GA-approved processor and shall include a copy of their GA approval for the process in the certification package. Seller and its sub-tier supplier(s) shall permit Buyer to perform surveys/audits to verify compliance with the special processes and to grant qualifications.

This clause will not relieve the supplier of the responsibility to ensure selected processors fully comply with any/all drawing/specification/process flow-downs from the primary Purchase Order/Contract or Seller responsibility to monitor supplier performance.

QA008. Substitution

BACKGROUND: In the past suppliers have made part substitutions or procured from unapproved sources of supply, in violation of order requirements, resulting in substantial non-conformance escapes to our customers. Under no circumstances are suppliers allowed to substitute for a part and/or directed source of supply other than listed on the drawing/requirement.

The Supplier **shall not** substitute any part or deviate from designated approved source of supply that is listed on the drawing/requirement without reviewing with GA-ASI Supplier Quality Engineering and obtaining the express written consent of GA-ASI's Buyer incorporated into the Purchase Order via change order.

QS - QUALITY CLAUSES ASSIGNED BASED ON SPECIFIC PART REQUIREMENTS

Seller is responsible to comply with each "QS" Q-Clause assigned. These Q-Clauses are assigned to parts based on specific part requirements. Often, these requirements can be found on drawings, specifications, or other requirements documents. However, Buyer reserves the right to impose these Q-Clauses as deemed necessary whether or not listed as a requirement in another document.

QS001. Government Inspection

BACKGROUND: This clause is usually imposed for Critical Safety Items (CSI). However, it is applied whenever Buyer's customer needs right of access for parts that require source inspection.

Customer inspection is required prior to shipment from seller's plant and/or seller's suppliers. At Buyer's discretion, inspections may include representatives from Buyer customers, Buyer, and/or the regulatory authority. Access shall be granted to all applicable areas of the facilities, at any level of the supply chain, involved in the PO and to all applicable records. Seller shall notify the Buyer five (5) working days prior to the time set for inspection and/or test of articles or materials. Buyer shall notify its customer.

QS002A. Quality System; Certification to ISO 9001

BACKGROUND: Commitment to certification shows a commitment to quality. The quality of every purchased part is important. Sellers may be asked to meet the requirement of ISO 9001 certification in order to provide product to Buyer.

Seller's Quality System shall conform to the requirements of ISO 9001. Third party registration by an accredited Registrar will be accepted as proof of compliance.

Obtaining and maintaining certification/registration by seller does not disallow Buyer to conduct audits, reviews, and inspections at the Seller's facility. Buyer reserves the right to conduct surveillance audits at seller's facility and assess seller's conformance to the ISO 9001 Quality Management System (QMS) requirements.

QS002B. Quality System; Certification to AS9100

BACKGROUND: Commitment to certification shows a commitment to quality. The quality of every purchased part is important. Sellers providing product that has a very high level of significance will be required to hold certification to AS9100.

Seller's Quality System shall conform to the requirements of AS9100. Third party registration by an accredited Registrar will be accepted as proof of compliance.

Obtaining and maintaining certification/registration by Seller does not disallow the Buyer to conduct audits, reviews, and inspections at the Seller's facility. Buyer reserves the right to conduct surveillance audits at seller's facility and assess seller's conformance to the AS9100 QMS requirements.

QS003. Seller Engineering Change Notification

BACKGROUND: When Buyer sources a product, it is tested to the configuration at the time of that purchase. The expectation is that configuration will not change. However, Buyer understands there are valid reasons to make updates and changes. It is imperative that Buyer be able to timely evaluate any such proposed updates and changes and assess the impact of those proposed updates and changes on Buyer products and to Buyer customers, and if necessary, make any changes/updates to Buyer product at integration and test.

Seller shall notify Buyer in writing of all proposed or actual Engineering Changes (including those generated by seller's sub tier suppliers that affect the Buyer purchased part).

Seller shall submit any requisite Change Notification via email to DL-AS-Supplier-Changes@ga.com a minimum of ninety (90) calendar days prior to the implementation of the change on the product sold to Buyer. Any requisite change to open POs cost and/or schedule requires a Change Order from Buyer.

Changes that require written Change Notification include:

- Form- The end item's geometrically measured configuration, density, and weight or other parameters that uniquely characterize the item, component, or assembly. Form as applied to software changes denotes the language, language level and media.
- Fit- The ability of the delivered end item to physically interface or interconnect with or become an integral part of another item.
- Function- The action or actions, which an end item is designed to perform.
- Firmware- The combination of a hardware device and computer instruction or computer data that resides as read-only software on the hardware device. The software cannot be readily modified under program control.
- Functional Characteristics- Quantitative performance parameters and constraints including operational and logistic parameters and their respective tolerances. Functional characteristics include all performance parameters, such as range, speed, lethality, reliability, maintainability, and safety.
- Material- A generic term associated with systems, equipment, finishes, stores, supplies and spares, including related documentation, manuals, computer hardware and software.
- Functional Configuration Identifications-The initial approved technical documentation for a critical item defining:
  - All necessary functional characteristics,
  - Verification demonstrating achievement of specified functional characteristics,
  - Necessary interface characteristics and associated critical items,
  - Critical item functional characteristics and lower-level critical items, if any, and
  - Design constraints such as envelope dimensions, component standardization, use of inventory items and integrated logistic support policies.
- Interchangeability- Any change impacting the delivered end items functional or physical equivalence, performance, reliability, and maintainability to the previously delivered end item for identical purposes.

- Interoperability- Any change to the component, assembly, or system which may prevent or impede the end item's ability to accept services to and from other systems or may impede or prevent the end item from operating with the other systems effectively and efficiently.
- Changes in Sub-tier Suppliers- Any change/addition/deletion of a subordinate supply chain seller providing content to the purchased end item component or assembly delivered to Buyer.
- Changes in test/inspection methods- Any change in techniques used as a basis for product, component, or system acceptance.
- Changes in Bulk Materials- Any new source for raw materials with special characteristics from new or existing Suppliers. Any change in product appearance attributes where there is no appearance specification. Any changed parameters in the same process (e.g., outside Part Failure Modes and Effects Criticality Analysis (PFMECA) parameters of the approved product including packaging. Any change outside of the Design Failure Modes and Effects Criticality Analysis (DFMECA) (e.g., product composition, ingredient levels etc.) of the approved product.
- Any of the above noted changes originated by Seller's suppliers and sub-tier suppliers.

Seller shall include the following with any Change Notification.

1. Documentation updates that affect cost, warranty, or contract milestones.
2. Affected part number(s) including Lot#(s), date code(s), or S/N(s) open POs,
3. Technical description of change, and technical impact
4. Reason/rationale for change
5. Financial impacts to Buyer (if any)
6. Details of potential impacts to both seller/ Buyer WIP, stores, and/or Buyer fielded products.
7. The revised specification/drawing

QS004A. First Article Inspection (FAI)/Report (FAIR)

BACKGROUND: First Article Inspection (FAI)/Reporting (FAIR)is a verification that all requirements are met, and the results of the inspection are documented completely providing a detailed record. Because this is performed on one item, this is effective in confirming that a tool or process has the ability to make parts within specified requirements. However, FAI does not relieve seller from making subsequent parts to requirements. Therefore, seller should have an inspection plan in place to ensure all parts meet requirements and prevent escapes of non-conformances to Buyer. Because Buyer will validate some, or all, features on the same part Seller uses for FAI, tagging the part is essential. The FAIRs do not need to be submitted with each shipment once the FAIR is received and accepted by Buyer receiving inspection.

FAIRs shall be submitted in accordance with the latest version of the Aerospace Standard 9102. FAIRs shall be submitted on the first production lot, on the first order with this Q-clause invoked on the PO. The FAIR shall be documented on forms 1, 2 and 3. As specified in the Standard, Supplier forms are acceptable as long as they meet the intent of AS9102 (current version). After the FAIR has been accepted by the buyer on first production run with this q-clause invoked, full and partial (delta) FAIs and FAIRs shall be conducted and submitted for reasons as specified in the Standard. FAIRs shall consist of recorded actual drawing attributes, specification values (including tolerances), and/or requirements (dimensional, test data, processes, drawing notes, etc.). FAIs shall be provided against the drawing for the specific part number on the PO.

The first article item shall be clearly identified by a tag attached to the item or a label applied to the item's bag indicating the item was used to conduct/complete seller's FAI. A copy of the FAIR and any applicable certifications shall accompany the First Article part. The Buyer reserves the right to verify any or all of the characteristics documented on the FAIR at the seller's facility.

Requirements:

1. Follow AS9102 (latest version), using forms 1, 2, and 3, or equivalent
2. Clearly identify, with a unique tag, the part used to conduct the FAI
3. Submit FAIR with the first article part

It is preferred that a bubbled drawing be provided with the FAIR.

Once the first article and the FAIR is accepted by Buyer, seller shall not deviate from the process, change suppliers, or manufacturing facility locations without written authorization of the Buyer. Buyer reserves the right to request additional FAIRs due to special circumstances.

QS004B. First Article Inspection Planning/Reporting for Critical Safety Items (CSI)

BACKGROUND: This is similar to QS004A with some additional requirements driven by the customer. Due to the safety impact of these parts, control of materials and processes is essential. The required FAIRs do not need to be submitted with each shipment once the FAIR is received and accepted by Buyer receiving inspection.

Seller shall submit a First Article Inspection Plan (FAIP) to the Buyer within fourteen (14) calendar days of PO award. The FAIP shall list the intended methods used to verify compliance to the specific drawing dimensions, values and/or requirements. Once the FAIR has been delivered, any revisions to the FAIP that occur shall be delivered to Buyer five (5) working days prior to the start of the FAI.

FAIR shall be submitted in accordance with the latest version of the Aerospace Standard 9102. FAIRs shall be submitted on the first production lot, on the first order with this Q-clause invoked on the PO. The FAIR shall be documented on forms 1, 2 and 3. As specified in the Standard, Supplier forms are acceptable as long as they meet the intent of AS9102 (current version). After the first production run with this Q-clause invoked, full and partial (delta) FAIs and FAIRs shall be conducted and submitted for reasons as specified in the Standard. FAIRs shall consist of recorded actual drawing attributes, specification values (including tolerances), and/or requirements (dimensional, test data, processes, drawing notes, etc.).

The first article item shall be clearly identified by a tag attached to the item or a label applied to the bag indicating the item was used to conduct/complete the Seller's FAI. A copy of the FAI and any applicable certifications shall accompany the First Article item. The Buyer reserves the right to verify any or all of the characteristics documented on the FAI report at the Seller's facility.

Requirements:

1. Follow AS9102 (latest version), using forms 1, 2 and 3, or equivalent
2. Clearly identify, with a unique tag, the part used to conduct the FAI
3. Submit FAIR with the first article part

Once the first article and FAIR is accepted by Buyer, seller shall not deviate from the process, change suppliers, or manufacturing facility locations without written authorization of the Buyer. Buyer reserves the right to request additional FAIRs due to special circumstances.

QS005. Paint Color Verification

BACKGROUND: This clause is for the purchase of paint used at Buyer facility. It provides the method of confirmation of color and sheen (via the SAE standard) and stipulates coupons for verification at Buyer facility.

Each shipment of paint shall come from the same master batch. The seller shall submit two (2) coupons approximately 3" X 6" produced using standard paint application practices with the batch of paint provided in this shipment. In addition, seller shall provide the actual manufacturer's color reading report for each coupon. The color shall match the SAE-AMS-STD-595 color specified in the Purchase Order and as delineated in the applicable material specification using Precise Color Matching, Individual Color Chips. Coupons shall be packaged in light-fast envelopes, to preserve the chips from fading and damage in shipment. The Buyer will utilize provided coupons to validate compliance to the requirements.

If coupons and reports were previously provided with a shipment from the same master batch, it is not mandatory to supply new coupons and reports. In the event coupons are not provided for a subsequent shipment of the same master batch, the following shall be included on the certificate of conformance:

1. A statement indicating chips were provided for this master batch with a previous shipment
2. Date of previous shipment that included the chips and reports for this master batch

QS006. Critical Safety Item (CSI)

BACKGROUND: This clause will apply to POs that include items that have been identified by the Buyer customer as Critical Safety Items (CSI). Buyer and/or the Buyer customer has imposed several requirements that must be met in order for seller to sell this product to Buyer and the Buyer Customer.

Seller shall complete and submit Part/Process Failure Modes and Effects Analysis (PFMEA) and CSI Control Plan to Buyer prior to initiation of manufacturing in accordance with GA-ASI ASI-04480, Critical Safety Item Supplier Plan. Submitted results of the PFMEA and CSI Control Plan will be reviewed by Buyer and approval will be granted in writing by the Buyer, CSI Control Board. Upon such written approval, the CSI Control Plan is considered frozen, and seller shall not make any changes without prior written approval of the Buyer, CSI Control Board. Seller shall not ship parts without prior written CSI Control Plan approvals. So long as no changes are made to the CSI Control Plan, subsequent parts may be shipped under the approval of the frozen CSI Control Plan. CSI Records shall be retained for ten years as a minimum, and offered to GA-ASI prior to disposal.

Seller shall flow this requirement down to seller's sub-tier supplier(s) for this order, based on risk identified in the approved PFMEA.

During performance of this program, the Buyer and Buyer's Customer reserve the right to perform on-site reviews of Sellers CSI Control Plan, Procedures and Records to verify continued adherence to the Critical Safety Item Supplier Plan and related drawing requirements by the seller and the seller's sub-tier supplier(s).

QS006A. Safety Critical Item (SCI) Notification (DFAR 252.209-7010)

BACKGROUND: This clause will apply to POs that include items that have been identified by the Buyer customer as Safety Critical Items (SCI). Buyer and/or the Buyer customer has imposed several requirements that must be met in order for seller to sell this product to Buyer and the Buyer Customer.

This part has been designated as a Safety Critical Item (SCI) and subject to heightened, risk-based surveillance by the designated quality assurance representative.
Seller shall flow this requirement down to seller's sub-tier supplier(s) for this order.

QS007. Inspections: Source Inspection

BACKGROUND: Source inspection is used to meet a contractual requirement with a customer of Buyer in order for Buyer to eliminate risk of receiving non-conforming parts or to verify features that cannot be verified at Buyer receiving inspection. Buyer may elect to assign source inspection to qualified and approved delegates of the Seller or to a 3rd party quality services provider. To ensure a thorough and timely Source Inspection, all certification and test reports should be amassed and presented with the parts or promptly upon request.

Buyer shall have the right to conduct Source Inspection (SI) for this PO either on-site at seller's facility, and/or at seller sub-tier supplier's facility, or virtually by Buyer. If Buyer elects to perform virtual SIs, Seller shall promptly provide certifications, photos, test reports, etc. as reasonably requested by Buyer. Inspection/test and/or in-process inspection/test of the articles specified in this PO will be performed by Seller. Source inspections may be accomplished by 1) Buyer's Quality Inspector or Quality Engineer, 2) Seller's approved Delegated Quality Representative (DQR) through the Delegated Product Release Verification (DPRV) Program, or 3) Third party quality services inspector assigned by the Buyer. Buyer's Quality Representative, or DQR, may elect to witness such inspections during their performance or to review inspection documents/records prepared by seller and made available at the agreed-upon time and at the agreed upon location of the Source Inspection. Prior to start of fabrication, seller and the Buyer shall determine the process steps at which SI shall be conducted. Seller shall notify the Buyer of the scheduled inspection/test date, five (5) working days (within the US) or fifteen (15) working days (outside the US), in advance. Product release after the completion of an acceptable SI shall be by Buyer stamp or signature by the Buyer's Quality Representative or DQR on seller's shipping or inspection documents.

Note: Delegated Product Release Verification (DPRV) applies if your company has applied for, and been granted, authorization to perform product acceptance inspections on behalf of GA-ASI. DPRV authorization allows your company to immediately perform inspections once material has been fully processed and final inspection has been performed. DPRV inspections are performed AFTER and are in addition to your company's final inspection operation.

Inspection delegation limitations, expectations and requirements are detailed in the Letter of Agreement (LOA) that is on file in the 'Quality' folder in BOX or other file-sharing medium.

If your company would like to be considered for DPRV authority, please contact the GA-ASI Supplier Quality Assurance team at DL-SQA-DPRV@ga.com.

QS007B. Inspections: <u>Seller Inspection Pre-Secondary Operations</u>

BACKGROUND: GA-ASI sources product that requires secondary processing by the seller. Once the product reaches the Seller final inspection and GA-ASI, some features are not measurable. The features are only measurable at the operation of manufacture and/or prior to the secondary operation. Therefore, the Seller is asked to provide evidence with each shipment that those features meet requirements. Examples of dimensions where this clause applies are:
- Dimensions and features affected by the applications of organic coatings such as primers, paints, dry film lubrication as indicated on the engineering documentation
- Positional tolerances and other affected GD&T features prior to the installation of hardware such as PEM Nuts, helical thread inserts, etc.
- dimensions obscured by subsequent welding or other assembly operations such as enclosures, tube assemblies etc.

The seller shall submit a Dimensional Inspection Report (DIR) with each shipment of each production lot. Dimensions to be included in the DIR are those that require measurement prior to a secondary operation and cannot be validated at final inspection. A DIR may also include the results of all other drawing notes and features. Dimensions are to be recorded while work is in process based the manufacturing lot size per the sampling plan chart below. An entire lot is considered discrepant if nonconformities are discovered on any sample. The entire sample size shall be included on the DIR. The DIR needs to be created only once for each production lot. However, the DIR shall be included with each delivery from that production lot. Samples are to be pulled at random.

Sampling Plan

Lot Size	1-2	3-25	26-50	51-90	91-150	151-280	281-500	501-1200	1201-3200	3201-10,000	10,001 and over
Sample Size	100%	3	5	6	7	10	11	15	18	22	29

Purchase Order flowdown notes may further detail dimensional inspection requirements.

Unless otherwise directed by GA-ASI, the DIR for these specific dimensions shall consist of:

- part information including (at a minimum)
  - Part number
  - Description
  - Batch / lot traceability
  - Purchase order number
  - Production lot quantity
  - Sampled quantity
- Drawing requirements including notes, dimensional features, and sheet/zone locations
- The actual results for each measurement recorded as individual measurements or a range
- References to any Supplier Disposition Requests (SDRs)
- Evidence of acceptance (stamp and or signature including title)
- Date of lot acceptance

Suppliers may use their own inspection format to provide this information.

QS008A. Traceability Requirements: Serialization Not Required

BACKGROUND: Traceability enables faster investigation and containment should an issue arise. Any component or raw material can be the root of an issue. Maintaining traceability of unique lots of materials and subcomponents that go into a product is essential for containment activities. For clarity, duplication does not refer to pieces within a lot. Duplication refers to reuse of a lot/date/heat codes for completely different lots.

Unless otherwise specified on the PO, seller shall provide a means of traceability down to the purchased items/materials used to produce the PO. Seller may use the original manufacture Lot/Date/Heat Code or the Seller's method for identifying the end item product as required for proper traceability for non-serialized items. Seller shall package each Lot/Date Coded batch separately. Duplication of Lot/Date/Heat Code is prohibited.

Tape and reel products may contain a maximum of two Lot/Date Codes per reel without authorization. Both Lots/Date Codes shall be listed on the corresponding shipper and on the immediate packaging.

If the end item traceability includes serial numbers, or if the only method of traceability is serialization and neither QS008B nor QS008C is identified as a requirement on the PO, Seller shall ensure all serial numbers for each part in this shipment are identified on the shipper.

QS008B. Traceability Requirements: Serialization Required

BACKGROUND: Traceability, especially serial numbers, provides Buyer and its Customers a means for tracking a number of Customer required metrics for the Buyer product. Additionally, serialization enables faster investigation and more detailed containment should an issue arise. Buyer scanning equipment drives the format requirements. Please note: Auto correct has been known to replace a "hyphen" with an "end dash" which is a longer symbol and will cause a scan failure.

Seller shall identify each part with a unique serial number, the maximum number of alphanumeric serial number characters shall be "18", including all allowable symbols "-" (hyphen) and "/" (forward slash) (no other symbols, including spaces, allowed). Serialization of Alpha characters shall be capitalized A-Z. In the absence of a drawing identification requirement, part marking serialization shall be performed in accordance with standard industry practices.

Serialized shipments shall have serial number(s) listed on the corresponding shipper. Duplication of serial numbers is prohibited. Serial numbers shall be easily accessible for scanning and visual verification unless otherwise noted on the applicable drawing(s). The preferred method of serialization, where practical, is the use of bar codes applied directly to the part, using machine-readable marks either linear (no-UID) or 2D (UID) barcodes in accordance with the latest revision of MIL-STD-130.

Seller shall ensure all serial numbers for each part in this shipment are identified on the shipping document (shipper, packing slip, etc.).

QS008C. Traceability Requirements: Serialization for Systems and Kits

BACKGROUND: Traceability, especially serial numbers, provides Buyer and its Customers a means for tracking a number of customers required metrics for the Buyer product. Additionally, serialization enables faster investigation and more specific containment should an issue arise. Buyer scanning equipment drives the format requirements. Please note: Auto correct has been known to replace a "hyphen" with an "end dash" which is a longer symbol and will cause a scan failure.

Seller shall identify each System or Kit (which include two or more boxes of serialized hardware)

with one unique serial number, the maximum number of alphanumeric serial number characters shall be "18", including all allowable symbols "-" (hyphen) and "/" (forward slash) (no other symbols, including spaces, allowed). Serialization of Alpha characters shall be capitalized A-Z. Seller shall include a shipper that includes the top-level part number & serial number, first level assembly part number(s) & serial number(s), and, if applicable, second level, major assembly part number(s) & serial number(s). The outside of the primary container in the group shall be identified with its part number & serial number, and the System part number & serial number. Duplication of serial numbers for a given part number is prohibited.

Seller shall ensure all serial numbers for each part in this shipment are identified on the shipping documentation (shipper, packing slip, etc.).

QS008D. Traceability Requirements: Serialization for Prototype Parts, Systems and Kits

BACKGROUND: Traceability, especially serial numbers, provides Buyer and its Customers a means for tracking a number of customers required metrics for the Buyer product. Additionally, serialization enables faster investigation and more specific containment should an issue arise. Buyer scanning equipment drives the format requirements. Please note: Auto correct has been known to replace a "hyphen" with an "end dash" which is a longer symbol and will cause a scan failure. NOTE: GA-ASI does not allow duplication of Serial Numbers when the prototype parts, shift from unreleased to released.

GA-ASI prototype parts, systems and kits are part numbers that begin with the prefix "EU-". Seller shall identify each part with a unique serial number. The maximum number of alpha numeric serial number characters shall be "18", including all allowable symbols "-"(hyphen) and "/" (forward slash) (no other symbols, including spaces, allowed). Serialization of Alpha characters shall be capitalized A-Z. In the absence of a drawing identification requirement, part marking serialization shall be performed in accordance with standard industry practices.

If the prototype part being delivered is a system or a kit, following the alpha and numeric rules in the first paragraph, the Seller shall identify each System or Kit (which include two or more boxes of serialized hardware) with one unique serial number. Seller shall include a shipper that includes the top-level part number & serial number, first level assembly part number(s) & serial number(s), and, if applicable, second level, major assembly part number(s) & serial number(s). The outside of the primary container in the group shall be identified with its part number & serial number, and the System part number & serial number.

Serialized shipments shall have serial number(s) listed on the corresponding shipper. Duplication of serial numbers is prohibited, even when the EU- prefix drops off. Serial numbers shall be easily accessible for scanning and visual verification unless otherwise noted on the applicable drawing(s). The preferred method of serialization, where practical, is the use of bar codes applied directly to the part, using machine-readable marks either linear (no-UID) or 2D (UID) barcodes in accordance with the latest revision of MIL-STD-130.

Seller shall ensure all serial numbers for each part in this shipment are identified on the shipping document (shipper, packing slip, etc.).

QS009A. Certification of Material(s): Retention

BACKGROUND: Material certifications are requested when material specifications are key to the product or are a Buyer Customer requirement. This Q-Clause is notification that a Material Certification is required but does not need to be submitted with the parts. The certification package is stored by Seller and made available upon request from Buyer. This applies to parts, components of sub-assemblies, and assemblies as defined on the Buyer drawings, BOMs, and specifications.

Buyer requirements documentation may specify materials/subcomponents. Seller shall collect

and retain, certification records for specified materials and subcomponents used in the manufacturing of the purchased product. If any subcomponents or processes used in the manufacturing of this product are procured from Seller sub-tier suppliers, a certification from the sub-tier suppliers is to be collected and retained with the Seller's top-level certification.

Certificates shall include:

1. For raw materials, material chemical and physical characteristics as noted on the Buyer drawing(s) and/or Bill of Materials (BOMs) with actual values recorded.
2. Process Specifications as noted on the Buyer drawing(s) and/or BOM(s)
3. Verification the specified material(s)/subcomponent(s) meet requirements (including both product number and source)

If Buyer requests the certification package, Seller shall provide the certification package within two (2) working days of the request.

QS009B. Certification of Material(s): Metallic Materials (except Titanium); Submission

BACKGROUND: Material certifications are requested when material specifications are key to the product. This Q-Clause is notification that delivery to Buyer of a Certification of Material is required to be submitted with the parts. The certification package will be submitted with each shipment and will also be retained by Seller. This applies to parts, components of sub-assemblies, and assemblies as defined on the Buyer drawings, BOMs, and applicable specifications used in the completion of the PO.

Buyer requirements documentation may specify raw materials. Seller shall collect, retain, and submit a copy of its certification records to Buyer for specified raw materials used in the manufacturing of the purchased product. If any subcomponents used in the manufacturing of this product are outsourced to Seller sub-tier suppliers, a certification from the sub-tier suppliers is to be collected, retained, and submitted with the Seller's top-level certification.

Certificates shall include:

1. For raw materials, material chemical and physical characteristics as noted on the Buyer drawing(s) and/or Bill of Materials (BOMs) with actual values recorded.
2. Process Specifications as noted on the Buyer drawing(s) and/or BOM(s)
3. Verification the specified material(s)/subcomponent(s) meet requirements (including both product number and source)

If the drawing does not define a specific raw material specification, contact Buyer for direction.

If Buyer requests the certification package after delivery, Seller shall provide the certification package within two (2) working days of the request. Refer to Terms and Conditions for period required for record retention.

QS009C. Certification of Material(s): Titanium; Submission

BACKGROUND: Material certifications are requested when material specifications are key to the product. For titanium, the impact of the specification limits is even more significant. This Q-Clause is notification that delivery to Buyer of a Certification of Material is required to be submitted with the parts. The certification package will be submitted with each shipment and will also be retained by Seller. This applies to parts, components of sub-assemblies, and assemblies as defined on the Buyer drawings, BOMs, and applicable specifications used in the completion of the PO. This clause does not apply to Titanium powder. For additional information, see Definitions Section for definitions of different property types.

Seller shall include with each shipment of the raw material and/or end item product

manufactured from Titanium material, an independent laboratory certified test report that states that a lot of material furnished has been tested, inspected, and found to be in compliance with the applicable material specifications as defined on the Buyer drawing and/or BOM. The test report will list the specifications, including revision numbers or letters, to which the material has been tested and/or inspected and the material lot to which it applies. The test report shall include quantitative limits for chemical, mechanical, and physical properties, and contain the actual test and/or inspection values obtained.

If the drawing does not define a specific titanium specification, contact Buyer for direction.

If a retained copy is requested, Seller shall provide the certification within two (2) business days of the request.

QS009D. Certification of Material(s): Non-Metallic Materials and Modified Subcomponents; Submission

BACKGROUND: Material and process certifications are requested when material specifications are key to the product. This Q-Clause is notification that delivery to Buyer of a Certification of Material is required to be submitted with the parts. The certification package will be submitted with each shipment and will also be retained by Seller. This applies to parts, components of sub-assemblies, and assemblies as defined on the Buyer drawings, BOMs, and applicable specifications used in the completion of this order.

For plastics, proprietary materials, and modified subcomponents, Seller shall provide and retain a certification from the material manufacturer indicating that the material meets its specification. The certification shall be provided with each shipment. If a retained copy is requested, Seller shall provide the certification within two (2) business days of the request.

QS010. Foreign Object Debris/Damage (FOD) Prevention

BACKGROUND: Foreign object debris/damage (FOD) can negatively impact the function and performance of a product. Numerous examples can be found in any industry.

A FOD prevention program shall be maintained by seller. Seller's FOD prevention program shall include the review of design and manufacturing processes to identify and eliminate foreign object entrapment areas and paths through which foreign objects can migrate.

Seller's FOD prevention program shall include Seller's periodic self-assessment of its internal FOD prevention practices, and where appropriate, an assessment of its sub-tier supplier(s) to measure effectiveness of program compliance requirements. Seller's FOD prevention program will provide initial and periodic FOD internal trainings, as deemed appropriate by Buyer.

QS011. UPA16400 Workmanship Requirements

BACKGROUND: Some part and assembly drawings are ambiguous. This clause applies to the titled workmanship requirements document to provide clarity. This clause is generally assigned to parts by program.

UPA16400 Workmanship Requirements apply to the PO. Seller is responsible to identify and conform to the applicable section(s) of Buyer drawing UPA16400 "Engineering Criteria, Workmanship & Drawing Clarification" on all end item deliverables at the latest revision in effect at the issue date of the PO.

Prior to performing any sections/paragraphs indicated as "Rework" or allowable material substitutions in UPA16400, Seller shall submit a SDR to Buyer. An approved GS-type QN resulting from the SDR will be the authorization from Buyer to proceed.

QS012A. Process Control Requirements: Level I; High

BACKGROUND: This clause is assigned to new or newer parts (exceptions by Buyer may apply) deemed by Buyer to be high in importance to functioning of the Buyer product or where an issue with the part presents higher risk.

Seller shall provide a detailed process description(s) and process control plan(s) for all processes utilized to manufacture this part/assy. The process description(s) will include operation definition, equipment used, workflow, applicable specifications/procedures/work instructions, process set-up sheets/raw material recipes, manufacturing location, and sub-tier supplier identification. The process control plan(s) are to include part/process inspection criteria, verification methods, sampling plans, and reaction plans. Where applicable, Seller shall also define tooling used, special handling, and packaging requirements. Seller shall submit the process description(s) and control plan(s) to Buyer quality representative for written approval. At the time of submission, processes are considered frozen. Changes to the approved process(es)/plan(s) require Buyer quality representative written approval prior to implementation.

Key Deliverables/Requirements:

1. Detailed process description
2. Process Control Plan
3. Review and written approval by Buyer QA prior to implementation of process/plan changes

QS012B. Process Control Requirements: Level II; Medium

BACKGROUND: This clause applies to existing parts deemed by Buyer to have significant importance to the functioning of the Buyer product or where an issue with the part presents a concerning level of risk.

Seller shall notify Buyer of any change to the established process(es) used to manufacture this part/assy. Changes may include operation definition, equipment used, workflow, applicable specifications/procedures/work instructions, process set-up sheets/raw material recipes, manufacturing location, sub-tier supplier identification, control plans, and inspection plans. Where applicable, Seller shall notify Buyer of changes to Seller defined tooling used, special handling, and packaging requirements. Changes to the approved plan will require Buyer quality representative written approval prior to implementation.

Key Deliverables/ Requirements

1. Notification of changes to established manufacturing process(es)/plan(s)
2. Review and written approval by Buyer QA prior to implementation of process/plan changes

QS012C. Process Control Requirements: Level III; Low

BACKGROUND: This clause applies to parts deemed by Buyer to have importance to the functioning of the Buyer product or where an issue with the part presents risk.

Seller shall notify Buyer in writing and prior to making any change to the established processes to manufacture this part/assy. Changes may include operation definition, equipment used, workflow, applicable specifications/procedures/work instructions, manufacturing location, sub-

tier supplier identification and inspection plans. Where applicable, Seller shall also define tooling used, time/temp criteria, special handling, and packaging requirements. Changes to the approved plan will require written notification to Buyer prior to implementation.

Key Deliverables/Requirements

1. Notification of changes to established manufacturing process(es)/plan(s)
2. Written Notification delivered to Buyer thirty (30) days prior to implementation

QS013. Calibration

BACKGROUND: The purpose of this clause it to ensure Buyer purchased calibrated measuring equipment, calibration services, and items that are to be provided in a calibrated state, are built to, or calibrated in, a manner that meets certain standards.

Paragraphs A, B & C apply when QS013 is required

a. Seller shall be responsible for the calibration and applicable maintenance of any equipment, tooling, or gauges provided from the Buyer to the Seller under this procurement agreement
b. Seller's equipment calibration system shall be compliant with one of the requirements listed below
    1. ANSI/NCSL Z540
    2. ISO 17025
    3. ISO 10012
    4. MIL-STD-45662A
c. When Seller is the OEM and they are calibrating their own products, the Seller may determine the appropriate calibration method/standard

For each calibrated item, Seller shall provide a data package that meets the requirements of the above standards including as found and final results, acceptance criteria, and traceability to applicable national standards. The certificate shall also state the operating error per specification, the degree of correction of out of tolerance condition and remaining uncorrected out of tolerance condition, if applicable.

QS014. Electrostatic Sensitive Devices (ESD)

BACKGROUND: This clause is applied to eliminate the risk of ESD on sensitive devices.

For Electrostatic Sensitive Devices delivered under the PO, Seller shall ensure that these devices are packaged and identified to provide adequate electrostatic protection in accordance with the Original Equipment/Component Manufacturers (OEM/OCM) Electrostatic Sensitive Devices material storage and handling protocols.

QS016A. Welding Process Requirements

BACKGROUND: Because of the significance of welding to the aerospace industry, Buyer is taking additional steps to assure welding Sellers meet necessary requirements to weld and test for Buyer. Welding Sellers who do not obtain the required Buyer approval will not be able to supply Buyer with welded product.

Welding Process Approval Requirements are in addition to those set forth in QA007, Authorized Special Process Providers (Nadcap). When QA016A is invoked, QA016B is also required for NDI Inspection.

Seller shall conform to the welding and non-destructive examination requirements set forth in

the current revision of ANSI/AWS D17.1, Specification for Fusion Welding for Aerospace Applications or ANSI/AWS D17.2, Specification for Resistance Welding. Seller shall submit a documented Weld Procedure Specification (WPS) and supporting Procedure Qualification Record (PQR) for Class "A" and "B" type welds to the Buyer procurement representative for written approval by Buyer Engineering Authority. Seller shall submit full document package as defined in Table 1.

Seller and its sub-tier supplier(s) shall permit Buyer to perform surveys/audits to verify compliance with the welding and qualification requirements. If Seller uses sub-tier suppliers to perform welding or test services, the requirements specified in the Buyer drawing/specifications, PO, other requirements documents, and this Q-Clause (QS016) shall be flowed down to its sub-tier supplier(s) and the Seller shall ensure full compliance with these requirements by its sub-tier supplier(s).

Any in-process weld rework/correction performed on GA-ASI material shall be documented by the supplier's non-conforming material process. The maximum allowable weld rework attempts to an individual flay/indication/location are two (2).

Table 1. Requirements for Welding Processes on Buyer Product

Welding Process Specification	Requirement & Test Reference	Approvals	Document Packages Required for Approval/Acceptance
AWS D17.1; AWS D17.2; CLASS A and/or CLASS B	AWS D17.1 Sections 5 & 7 AWD D17.2 Sections 4 & 5	Submit to: Buyer Authorized Procurement Representative Approval Granted by: The Buyer Weld SME, Level III NDI, SQE, and Engineering Weld Authority Approval Notification: Provided to Seller via a GA-ASI Weld approval SG type QN	Initial Qualification Submittal & Changes to WPS: ▫ Weld Map or Diagram (as applicable per supplier process) ▫ Controlled Documented WPS & Controlled Documented PQR with essential variable(s) per AWS D17.1 / AWS D17.2 ▫ 3rd Party Certifications ▫ 3rd Party Nondestructive/metallographic examination results With Each Lot: ▫ As required per AWS D17.1 / AWS D17.2
AWS D17.1; AWS D17.2; CLASS C	AWS D17.1 Sections 5 & 7 AWD D17.2 Sections 4 & 5	Visual Inspection by Supplier CWI (approval granted through Buyer Weld Authority)	Initial Submittal: Certification of Inspection by CWI (typically a CWI stamp) WPS if requested by Buyer

QS016B. Nondestructive Inspection (NDI) Requirements

BACKGROUND: Because of the significance of Nondestructive Inspection (NDI) to the aerospace industry, Buyer is taking additional steps to assure NDI Sellers meet necessary requirements for NDI certification and inspection for Buyer. NDI Sellers who do not obtain the required Buyer approval will not be able to supply Buyer with inspected

product.

Nondestructive Inspection (NDI) Process Approval requirements are in addition to those set forth in QA007, Authorized Special Process Providers (Nadcap). NDI process approval is required if the inspection method is directly called out on the drawing, or if called out within another processing specification (i.e., Welding per AWS D17.1, etc.).

All Nondestructive Inspection (NDI) shall be performed by suppliers who are Nadcap certified for each NDI method performed on Buyer hardware. Nadcap certified suppliers, and the specific NDI processes they are certified for can be found at www.eauditnet.com.

Examples of NDI processes include the following NDI methods:

a) Fluorescent Penetrant Testing (PT)

b) Magnetic Particle Testing (MT)

c) Ultrasonic Testing (UT)

d) Eddy Current Testing (ET)

e) Radiography Testing (RT)

f) Infrared Thermography (IR)

g) Shearography Testing (ST)

Nadcap certified suppliers and sub-tier suppliers shall submit full document package as defined in Table 2 to the Buyer for approval prior to processing hardware and when those approved documents are revised. Document package shall include the following and meet all requirements listed below:

1. The seller's written practice for NDI personnel certification

   All NDI processes shall be performed and interpreted by personnel qualified / certified in accordance with a written practice developed by the seller(s) to the requirements of NAS410 or EN4179. The seller's written practice must be approved by the seller's NDI Responsible Level III.

2. The seller's NDI procedure(s) and part specific technique sheet(s), as applicable

   All NDI processes shall be performed in accordance with detailed written procedures and part specific technique sheets, as required, that meet the requirements of the applicable specifications called out on GA-ASI released drawings.

3. Job Router, Work Order, etc.

   A job router, work order, etc. listing sequence of manufacturing operations shall be submitted for review and approval to ensure correct placement of NDI operations during the manufacturing process.

Table 2. Requirements for Nondestructive Inspection (NDI) on Buyer Product

Nadcap Certified Seller(s) Shall Submit the Following as Part of the Document Package:

Supplier(s) Documents	Approvals	Required to Submit for Approval to GA-ASI

• Written Practice for Seller(s) • NDI Procedure for each NDI method • Part and/or Process Specific Technique Sheet(s) • Job Router, Work Order, etc., listing sequence of operations	Submit to: Buyer Authorized Procurement Representative Approval Granted by: Level III NDI, SQE Approval Notification: Provided to Seller via a GA-ASI NDI approval SL & SG type QN	• Initial Qualification Submittal, prior to processing hardware • Revisions to approved documents

Non-Nadcap certified suppliers and sub-tier suppliers performing NDI, or suppliers performing NDI methods not controlled by Nadcap shall be approved by Buyer per QA007. Seller shall submit full document package as defined in Table 3 for approval during the initial qualification process/audit, when approved documents are revised, and during periodic re-qualification audits. Document package shall include the following and meet all requirements listed below:

4. The seller's written practice for NDI personnel certification

   All NDI processes shall be performed and interpreted by personnel qualified / certified in accordance with a written practice developed by the seller(s) to the requirements of NAS410 or EN4179. The seller's written practice must be approved by the seller's NDI Responsible Level III.

5. NDI personnel certification records

   NAS410 NDI certification submittal requirements are as follows:

   a) NDI Certification for suppliers Responsible Level III
   b) One NDI Level II Certification for each NDI method performed on GA-ASI material
   c) The records shall include each method the individual is certified for and the most recent eye exam date and results.
   d) The certifications shall include a certifying statement stating the individual is certified in the methods (e.g., MT, UT, PT) and meets the requirements of the company's written practice (include document number).
   e) The records shall be signed by the certifying authority and title along with typed/printed name.

6. The seller's NDI procedure(s) and part specific technique sheet(s), as applicable

   All NDI processes shall be performed in accordance with detailed written procedures and part specific technique sheets, as required, that meet the requirements of the applicable specifications called out on GA-ASI released drawings.

7. Job Router, Work Order, etc.

   A job router, work order, etc. listing sequence of manufacturing operations shall be submitted for review and approval to ensure correct placement of NDI operations during the manufacturing process.

Table 3. Requirements for Nondestructive Inspection (NDI) on Buyer Product

Non-Nadcap Certified Seller(s) Shall Submit the Following as Part of the Document Package:

Supplier(s) Documents	Approvals	Required to Submit for Approval to GA-ASI
• Written Practice for Seller(s) NDI Personnel Certification Records to include: • Responsible Level III Cert • One Level II Cert per method • One Eye Exam	Submit to: Buyer Authorized Procurement Representative Approval Granted by: Level III NDI, SQE Approval Notification: Provided to Seller via a GA-ASI NDI approval SL &SG type QN	• Initial Qualification Submittal, prior to processing hardware • Revisions to approved documents • Re-Qualification Audits
• NDI Procedure for each NDI method • Part Specific Technique Sheet(s)		
• Job Router, Work Order, etc., listing sequence of operations		

QS017. Micro Section Photo Requirement

BACKGROUND: This is a standard requirement for materials to which this clause is assigned. Materials include PWBs and other parts for which micro sectioning is a suitable method of verification.

Seller shall submit with the PO, photographs of the micro sectioned test specimens that clearly depict conformance to etch back and smear removal requirements per the identified application requirements on the engineering drawing.

QS018A. Test Data: Collection and Submission

BACKGROUND: This clause enables Buyer to verify product test results when determined significant or necessary to do so by Buyer.

Seller shall submit results of product testing in a form of documented data. This data shall include actual data attained and required specification values/requirements and overall pass/fail results.

QS018B. Test Data: Retention

BACKGROUND: Buyer does not require delivery of test data with its purchased products unless delivery is specified, or Buyer later determines that such delivery is required. Sometimes data is required to support investigations, etc. In those cases, Seller shall provide the test data for their product to Buyer promptly upon Buyer's request.

Seller shall retain results of product testing in a form of documented data. This data shall include actual data attained and required specification values/requirements. Seller shall provide the results to Buyer within three (3) working days of request from Buyer.

QS019. Data Storage and Sanitization

BACKGROUND: Buyer has a vested interest in knowing which memory within a product that it uses and/or incorporates into its products is volatile and non-volatile. This information enables Buyer to create procedures that will address how to prevent information that is proprietary or sensitive in other ways (e.g., classified) from being accessed by unauthorized individuals.

Seller shall provide a Certificate of Volatility (COV) that will delineate all volatile memory, nonvolatile memory, and media storage capabilities with its product. Buyer will provide Seller with a COV template (2.PQA.020-006 Certification of Volatility).

QS020A. Part Marking: Supplier Identification

BACKGROUND: This is a requirement for federal acquisitions.

Seller shall mark parts with their cage code (preferable) or assigned (Six digit) vendor code near the part number and revision in accordance with the identification and application requirements on the engineering drawing.

QS020B. Part Marking: 2D Data Matrix Unique Identification (UID) and Grading Report

BACKGROUND: This clause is driven by Customer requirements and applicable federal regulations, including the Federal Acquisition Regulations (FARs) and/or Defense Federal Acquisition Regulation Supplement (DFARS). Reports are used to ensure Unique Identification (UID) printing has not degraded and that the Customer will be able to read the label upon receipt.

Seller shall produce and verify 2D Data Matrix UID markings in accordance with the latest revision of MIL-STD-130. 2D Data Matrix UID shall be IAW MIL-STD-130, 5.2.3.2 Two-dimensional Symbol. Seller shall submit with each shipment Quality (symbol verification) reports IAW MIL-STD-130, 5.2.7.2 Data Matrix Symbol Quality MRI marking quality. The first and last UID markings of the lot shall be part of the samples that are verified. Human Readable Information (except direct part markings) shall be legible and accurate. 2D Data Matrix UID markings shall be affixed to be easily accessible for scanning and visual verification unless otherwise noted on the applicable drawing(s). The maximum number of alphanumeric serial number characters shall be “18”, including all allowable symbols “-“ (hyphen) and “/” (forward slash) (no other symbols, including spaces, allowed). Serialization of Alpha characters shall be capitalized A-Z.

QS020C. Part Marking: Unique Identification (UID) and Verification Performed by Buyer

BACKGROUND: This clause is driven by customer requirements and applicable federal regulations, including the FARs and/or Defense Federal Acquisition Regulations Supplement (DFARS). This clause is assigned when the marking is required but when Seller is unable to comply with the requirement. It is used as a notice that UID marking is required and that because Seller is unable to comply with the requirements, Buyer will apply the UID marking.

Seller acknowledges and agrees that UID marking in accordance with latest revision of MIL-STD-130 will be created and applied to Seller parts by Buyer personnel upon receipt by Buyer. This will include the issuance and marking of Serial Numbers if the parts are not serialized by Seller. Buyer’s application of the UID and serial numbers shall not impact the warranty. Seller shall provide necessary guidance for application.

QS021. Rework Report

BACKGROUND: Rework reports are used as part of the product log for the Buyer top level assembly.

In the event the item is returned with a reported defect and the seller determines the item is reworkable, Seller shall test, evaluate and rework as required. Seller shall provide a complete detailed rework report including test results, evaluation findings and description of all work performed.

Items may be returned as functional failures. In the event that the item is found to be fully functional, and the failure/discrepancy could not be duplicated, Seller shall state the Can Not Duplicate (CND) condition on the COC.

In the event that the item is replaced with a new item rather than being reworked and Seller will not be submitting a rework report, Seller shall provide a statement on the COC or pack slip indicating that the item was replaced.

QS022. Packaging, Handling, and Shipping

BACKGROUND: This clause is intended to ensure parts arrive in conforming condition. It also ensures packaging and storage does not induce a non-conformance. This clause applies when normal shipping and storage introduce a risk of non-conformance, or when parts must be stocked individually at Buyer, as determined by Buyer or its customer. This includes, but is not limited to, Titanium, plastic materials such as Torlon and Nylon, and other environmentally sensitive or shipping sensitive parts and assemblies.

Seller shall clean, preserve, and use special packaging as required on the PO.

If not specified, Seller may use specially designed shipping containers and/or good commercial practices as deemed necessary to prevent shipping damage. Parts are to be individually labeled. At a minimum, the label shall include the following information: Part number and part revision status. Packaging requirements contained on the Engineering drawing take precedence.

If order is for Printed Wiring Boards (PWB), package as follows per the type of finish, either 1, or 2 below:

1. HASL Finish: Each PWB shall be sealed individually using a moisture barrier bag, desiccant material, and humidity indicator card. Reference IPC-1601.
2. Silver/Gold Finish: Each PWB shall be sealed individually using a moisture barrier bag and humidity indicator card. Reference IPC-1601. Desiccant material should not be utilized.

QS023. Specialized Tooling

BACKGROUND: See clause below.

Specialized Buyer tooling is required to perform the PO. Contact Buyer procurement representative.

QS024. Age Sensitive Materials

BACKGROUND: This clause is necessary when Buyer must provide the material subject to a limited shelf-life or aging to the customer. It is necessary to ensure the product is usable when received by the customer.

Seller shall submit with each shipment for materials subject to aging, shelf-life information including manufacturer's lot or batch number and/or date code, and expiration date. A minimum of 80% shelf life must remain at time of receipt.

Note: For date codes expressed as a quarter and year as the date of manufacture (i.e., Q1, 2008), Buyer will use the first month and day of the specified quarter to receive materials and calculate the remaining shelf life.

QS025. Explosives

BACKGROUND: This clause is driven by Department of Transportation (DOT) *safety and regulations for explosives.*

The PO contains materials requiring Department of Transportation (DOT) classification. Seller shall tag each deliverable unit prior to packaging for shipment to indicate "EXPLOSIVE" DOT classification, type and net weight. Additionally, all intermediate and outer containers shall indicate the DOT shipping name, hazardous classification and storage compatibility group. The word "EXPLOSIVE" shall be clearly stenciled and visible on all sides of the package. Seller shall submit Bureau of Explosive documentation as to material classification, material description, explosive classification, and shipping information. Shipping information necessary to properly package, mark and label, in accordance with Department of Transportation Hazardous Materials Regulations shall be included. POs are subject to Buyer inspection at destination and will not be accepted by Buyer if Seller fails to comply with the requirements specified above.

QS026. Service Bulletin, Field Bulletin, Airworthiness Directives

BACKGROUND: This clause is applied to address Civil Aviation Authority requirements imposed on Buyer to reduce risk of airworthiness, reliability/maintainability, and safely issues. It is primarily directed at OEM products provided from both the OEM directly, as well as, distributors of OEM products. Notifications may be passed along to Buyer Customers .

Seller shall provide written notification of any OEM or Civil Aviation Authority recommended modifications to hardware or maintenance procedures that affect airworthiness, reliability/maintainability or safety. Notifications shall be provided to Buyer by email to SM-Vendor-Bulletin-Submission@ga.com. Seller format of notifications may be used. Any publication of an applicable Airworthiness Directive (AD), Service Bulletin (SB), Field Bulletin (FB) or other equivalent documentation shall be included with the notification. Seller shall note actions required to comply with their notification.

QS027. GIDEP Alerts

BACKGROUND: GIDEP Alerts are essential across manufacturing to ensure products function as intended. This sharing of information prevents observed product anomalies and issues that result in increased cost for both suppliers and customers.

Seller shall subscribe to the Government Industry Data Exchange Program (GIDEP). Seller shall immediately document and provide formal written notification(s) related to any observed discrepancies impacting products directly manufactured by, or procured from, the OEM and

distributed to Buyer. Notifications shall be emailed to Zz_AS_EE_Component@ga.com. If the notice is intended to provide hardware obsolescence or end of life notification, Seller is requested to provide this notification as soon as-possible prior to hardware end of life.

QS028. Seller/Distributor

BACKGROUND: This clause will only be applied to parts provided by distributors. It is intended to ensure OEMs are correct for the part being procured.

This PO includes parts, components, and/or materials, provided by Seller, that are not manufactured by the Seller. Required manufacturers are listed on the PO, design drawing, design specification, and/or other requirements documents provided to Seller. Seller shall confirm the purchase of these parts, components, and/or material from the specified/required manufacturers by listing them on the COC and packing slip.

Substitutions for manufacturers or part numbers not specified on the PO are prohibited.

QS029. Requirement for GA-ASI Process and Training Specifications

BACKGROUND: GA-ASI drawings may include specifications that are integral to the manufacturing and inspection of parts/materials on the order. Revisions to these specifications may not drive a revision to the drawing or other specifications. This clause requires the supplier to validate they are using the latest version for new orders. Further the Seller is to have established a training program to ensure their staff are trained to those specifications and that proof can be provided upon request.

The data package associated with the order may include drawings that reference GA-ASI Specifications required to complete the order. It is incumbent upon the supplier to ensure they, or any sub-tier suppliers used, are working to the latest specifications. Seller and seller's sub-tier suppliers shall comply with the revision that is in effect at the time the Purchase Order is placed, or at the time a change order is issued if the change order specifically addresses one or more of the specifications associated with this quality clause. A list of GA-ASI specifications along with their revision letters and release dates is available at https://www.ga-asi.com/suppliers/terms-and-conditions. If Seller does not have the latest version of any applicable specification, contact the Buyer

These specifications may also reference a training requirements specification. If the data package references this training requirement, Seller shall establish and implement a training program to ensure their staff has the necessary skills and training to realize the requirements of the drawing. Seller may use their own method of training but shall retain all training records. Should Buyer request objective evidence of training, Seller shall provide proof of training within 3 days of buyer request. If Seller is not able to provide such training, they shall notify the buyer immediately in writing.

The training program must trace the Employee skills required to the product the employee is producing. At minimum, if a specification is referenced on the drawing or PO and identifies employees as required to be:

1. "Trained"- the seller shall produce evidence showing the employee has completed training.
2. "Qualified" - the seller shall produce evidence the employee has completed training which includes a proficiency assessment.
3. "Certified"- the seller shall produce evidence the employee is certified to a written practice per NAS410, or equivalent for each nondestructive testing method being performed.

QS030. Sourcing QPL/QPD Specified Materiel/Material (as specified by AS6174)

BACKGROUND: Various Mil-Specs require that the manufacturer of the materiel be certified and listed on the applicable qualified product list (QPL) in the qualified products database (QPD). This clause is to aid in identifying which materiels require QPL/QPD listing.

Materiel provided shall be sourced from the qualified manufacturers list (QML) in the applicable qualified products list/qualified products database (QPL/QPD).

Seller shall have a system in place to ensure that QPL materiel is sourced only from manufacturers authorized/listed in the QPD website https://qpldocs.dla.mil/ or https://www.navair.navy.mil/qpl.

Seller shall include the COC and supply chain traceability from the authorized manufacturer with each shipment.

QS031. Limited Material Review Board (MRB) Authority

BACKGROUND: This clause conveys the expectation that the supplier shall be certified to either AS9100 or ISO9001 and have a documented system and procedure for handling nonconforming material when a supplier has been granted limited material review board (MRB) authority.

In accordance with AS9100 and/or ISO9001, the supplier shall establish and operate a Material Review Board (MRB) with the power to review, evaluate, and disposition, within the scope of this contract, nonconforming materials, parts, and assemblies that are determined by the supplier's MRB to have minor nonconformances only (see definitions below). GA-ASI retains MRB authority for all nonconforming materials, parts, and assemblies within the scope of this contract that have been determined by the supplier MRB to have major/critical nonconformances.

Utilizing the Supplier Disposition Request (SDR) process, Suppliers shall report any minor nonconformance that receives a disposition of "use-as-is" or "repair" from the Supplier's MRB prior to shipment of the materials, parts, or assemblies to GA-ASI. The report shall include the discrete tracking number, "Is" and "Should Be" statements, classification, disposition, and justification for each item listed. At any time, GA-ASI reserves the right to re-evaluate and/or re-classify any MRB performed by the supplier.

A "Major or Critical Nonconformance" is a defect that affects form, fit or function which cannot be eliminated through rework and affects any of the following:

- Health or Safety
- Performance
- Interchangeability, reliability, or maintainability
- Effective use or operation
- Weight or appearance (when a factor)

NOTE: Multiple minor non-conformances, when considered collectively, may raise the category to a major/critical non-conformance.

A "Minor nonconformance" is defined as everything other than a major/critical that does not reduce the usability of the product but is beyond the defined engineering requirements. A minor nonconformance does not adversely affect any of the following:

- Health or Safety
- Performance
- Interchangeability, reliability, or maintainability
- Effective use or operation
- Weight or appearance (when a factor)

QT - QUALITY CLAUSE REQUIREMENTS FLOWED IN PO TERMS AND CONDITIONS

Q-Clauses that begin with "QT" are found in the Terms and Conditions that accompany each PO. Please refer to the PO Terms and Conditions to ensure full compliance to each of the requirements in this section.

QT001. Notification of Facility /Ownership/Quality Manager/Quality System Change

The requirements for this Q-Clause are found in the Terms and Conditions provided with the PO. Refer to the Terms and Conditions sections titled "ASSIGNMENTS, CHANGES TO NAME OR PLACE OF MANUFACTURE" and "QUALITY CONTROL".

QT002. Buyer Review

The requirements for this Q-Clause are found in the Terms and Conditions provided with the PO. Refer to the Terms and Conditions section titled "QUALITY CONTROL".

QT003. Counterfeit Goods Detection and Avoidance

Refer to the Terms and Conditions section titled "COUNTERFEIT GOODS". This Q-Clause provides definition and clarification of the Terms and Conditions language.

Seller shall procure product directly from the OCM/OEM or an OCM/OEM authorized supplier (defined as authorized distribution). In the event the supplier cannot obtain the product identified on the PO through authorized distribution, Seller shall contact Buyer and shall not provide product obtained outside of authorized distribution without express written authorization from Buyer to deviate from authorized distribution.

Seller shall obtain unbroken chain of custody (supply chain traceability) for the item being provided and shall retain this documentation for 7 years after the contract ends. Seller shall provide unbroken chain of custody documentation to Buyer upon request and within 3 business days of the request. Unbroken chain of custody documents must start with the OCM/OEM and include all intermediaries in the chain up to and including delivery to GA-ASI. Acceptable documents include one or all of the following for each intermediary:

1. Certificate of conformance
2. Packing list
3. Invoice with pricing information redacted

All documents provided from each intermediary shall include:

1. Manufacturer Part Number (note: Seller shall also include Buyer Part Number)
2. Serial numbers or Lot number/Date codes if product is not serialized
3. Dates of each shipment to the next intermediary
4. Name and address of intermediary shipping the item

Seller's certificate of conformance includes compliance to this clause.

QT003B. Unbroken Chain of Custody (Supply Chain Traceability) Documentation; Submission

If the order includes Electronic Components/Assemblies (see definition), Seller shall submit Seller's C of C and unbroken chain of custody (see definition) documentation to the Buyer with

the shipment.

QZ - OTHER CLAUSES

QZ001. Barcoded Packaging Specification

BACKGROUND: This clause is intended to increase throughput and reduce errors at Buyer Receiving. This positively affects sellers as hold-ups are reduced and invoices get processed more efficiently as a result.

Seller shall provide barcoded product identification and associated documentation, in compliance with ASI-12014, for all physical deliverables. The total number of labels is based on the number of PO line items, number of serialized parts, and the number of packages for the specific PO line item. The labels shall be interpretable/readable by a barcode scanner and placed in a manner to prevent folds, creases, or damage.

QZ002. Quality Clauses Are Not Required

There are no quality clauses required for this part except when Barcoding per QZ001 is required.

5. ACRONYMS

The following is an alphabetical listing of acronyms used in this document.

AD	Airworthiness Directive
BOM	Bill of Materials
CAPA	Corrective Action Preventive Action
CND	Can Not Duplicate
COC	Certification of Conformance
COV	Certificate of Volatility
CSI	Critical Safety Item
CWI	Certified Weld Inspector
DFARS	Defense Federal Acquisition Regulation Supplement
DFMECA	Design Failure Modes and Effects Criticality Analysis
DOT	Department of Transportation
ESD	Electrostatic Sensitive Devices
FAI	First Article Inspection
FAIP	First Article Inspection Plan
FAIR	First Article Inspection Report
FAR	Federal Acquisition Regulation
FB	Field Bulletin
FOD	Foreign Object Debris/Damage
GIDEP	Government Industry Data Exchange Program
MRB	Material Review Board
NSN	National Stock Number
OCM	Original Component Manufacturer
OEM	Original Equipment Manufacturer
PFMEA	Part/Process Failure Modes and Effects Analysis

PFMECA	Part Failure Modes and Effects Criticality Analysis
PQR	Procedure Qualification Record
PWB	Printed Wiring Board
Q-Clause	Quality Clause
QML	Qualified Manufacturers List
QPD	Qualified Parts Database
QPL	Qualified Parts List
QMS	Quality Management System
RC	Root Cause
SB	Service Bulletin
SDR	Supplier Disposition Request
SI	Source Inspection
SQE	Supplier Quality Engineer
UID	Unique Identification
VOE	Verification of Effectiveness
WPS	Weld Procedure Specification

6. DEFINITIONS

The following is an alphabetical listing of definitions for terms used in this document.

Authorized Distribution	The chain of suppliers that includes only the OCM/OEM and the authorized suppliers to the OCM/OEM
Authorized Suppliers	Suppliers selected and authorized by OCMs/OEMs to distribute parts on the OCM/OEM's behalf. It may include authorized distributors, authorized manufacturers, and partners.
Chemical Properties	A property that can only be determined by changing the chemical make-up of the material.
Control Plan	A plan that identifies characteristics used to confirm the result of the manufacturing process to requirements. The control plan includes characteristic or requirement details, tolerances, assessment/measurement methods, etc.
Chain of Custody	Documented evidence of a part's supply chain history. This refers to documentation of all supply chain intermediaries and significant handling transactions, such as from OCM to distributor, or from excess inventory to broker or distributor. Also known as "supply chain traceability".
Electronic Components/Assemblies	Integrated circuits, discrete electronic components (including, but not limited to, transistors, capacitors, resistor, or diodes), or circuit assemblies or assemblies that incorporate circuit assemblies. Further, according to AS5553, components designed and built to perform specific functions using electric power and/or an

	electric or electromagnetic signal to demonstrate functionality
Intermediary	Any product supplier who takes physical custody of a product during shipping from an OCM/OEM to the Buyer.
Partial (Delta) FAI	A first article inspection of only characteristics that have changed since the most recent FAI. Characteristics may have changed due to design changes, configuration changes, process changes or other changes.
Precise Color Matching, Individual Color Chips	Method of color matching described within the SAE-AMS-STD-595 standard.
Major Manufacturing Issues	Issues affecting manufacturing that can impact delivery of product to agree upon schedules. Examples include, but are not limited to, a breakdown of non-redundant machinery or Union strike/walkouts.
Mechanical Property	Properties a material exhibits upon application of forces.
Non-Volatile Memory	Non-volatile memory is computer storage that does not lose content when power is lost.
Original Component Manufacturer (OCM)	An organization that designs and/or engineers a part and is entitled to any intellectual property rights to that part.
Original Equipment Manufacturer (OEM)	A company that manufactures products that it has designed from purchased components and sells those products under the company's brand name.
Physical Properties	Properties that are measurable such as density, coefficient of expansion, melting point, etc.
Supply Chain Traceability	See Chain of Custody.
Verification of Effective	A means for assessing if results are as expected and are consistent. Verification of effectiveness requires documented criteria and a report documenting results that meet the criteria.
Volatile Memory	Volatile memory is computer storage that only maintains its data while the device is powered.

7. IMPLEMENTATION DECISION

Doc Revision	Q-Clause	Description	Reason for change	Implementation Decision
N/A				