

ASTROLAB

SUPPLIER QUALITY MANUAL

**BUILDING MISSION READY HARDWARE
TOGETHER**

ASTR-10008 | V65 |



HOW TO USE THIS MANUAL

This manual defines Astrolab's baseline supplier quality expectations and should be used together with the applicable Purchase Order, Component Specification, drawing, statement of work, Quality Clauses, and other controlled contractual requirements.

Suppliers should review the applicable requirements as a complete package and engage Astrolab early when a requirement is unclear, not applicable, cannot be met as written, or may be better satisfied through an equivalent method.

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Purchase Order Quality Clauses are provided in Appendix A and apply only when invoked by the Purchase Order or other controlled contractual documentation.



01 PURPOSE, PHILOSOPHY AND APPLICABILITY

QUALITY AT THE SOURCE

1.1 Purpose

Astrolab suppliers are an extension of our team and are critical to our ability to safely and reliably deliver hardware for lunar surface operations. This Supplier Quality Manual defines baseline quality, communication and execution expectations for suppliers providing products, materials, processes and services to Astrolab.

The intent is not to prescribe how every supplier operates. The intent is to establish a clear framework for Supplier Quality while preserving the flexibility needed to operate in a fast-moving development and production environment. Suppliers are expected to maintain effective systems and controls appropriate to the product, service and associated risk.

1.2 Supplier Quality Philosophy

- o Build quality into your process; inspection alone does not create quality.
- o Communicate issues early; bad news does not improve with age.
- o Understand the requirement before starting affected work; ask when something is unclear.
- o Maintain traceability and objective evidence appropriate to the product and risk.
- o Control meaningful change; notify Astrolab when a change could affect product or program execution.
- o Manage your sub-tiers with discipline appropriate to the risk they introduce.
- o Work problems together; contain quickly, understand root cause, prevent recurrence.
- o Continuously improve; leave the process and supplier relationship better than we found it.

1.3 Applicability

This manual establishes baseline requirements applicable to external providers supporting Astrolab, as applicable to the product or service being provided. Additional or modified requirements may be invoked through the Purchase Order, Quality Clauses, Component Specification, drawing, specification, statement of work, or other controlled contractual documentation.

Not every requirement is applicable to every supplier or every product. Applicability should consider product or service type, criticality, manufacturing process, supplier scope and

contractual requirements. Where a specific standard or revision is explicitly required without allowance for equivalency, substitution requires Astrolab approval.

1.3.1 Supplier Acknowledgment

Acceptance of an Astrolab Purchase Order invoking this manual constitutes acknowledgment of the applicable requirements. Suppliers are encouraged to acknowledge receipt and identify questions, exceptions, proposed alternate methods, or requirements that cannot be met as written early in the procurement lifecycle. Silence should not be used as acceptance of a requirement the Supplier suspects it cannot meet.

1.3.2 Responsibility to Notify

The Supplier shall notify Astrolab when it becomes aware of a condition that may reasonably impact product conformity, reliability, safety, traceability, configuration, delivery, or the Supplier's ability to meet an Astrolab requirement. Initial notification should occur early; complete root cause is not expected before the Supplier raises the signal.



2.1 Quality Management System

Suppliers should maintain a Quality Management System appropriate to the products, processes and services provided to Astrolab. Certification to AS9100, ISO 9001, or an equivalent recognized quality standard is preferred where appropriate to scope; certification alone does not constitute approval or demonstrate capability for a specific Astrolab product.

2.2 Supplier Approval and Continued Qualification

Supplier approval and continued use may consider QMS maturity, capability, capacity, certifications, commodity or process capability, product and supplier criticality, historical quality and delivery performance, Issue Ticket and CAR history, responsiveness, assessment results, sub-tier/value chain risk and demonstrated ability to meet requirements.

Astrolab may use supplier self-assessments, remote reviews, onsite capability assessments, capacity reviews, process assessments or other evaluations appropriate to the product and associated risk. Approval may be full, conditional, commodity specific, product specific or process specific.

2.3 Astrolab Access and Supplier Support

Suppliers shall provide Astrolab and, when contractually required, Astrolab customers or regulatory representatives with reasonable access to applicable facilities, personnel, records, processes and products associated with Astrolab work. Access should be coordinated and conducted in a manner that protects proprietary, export controlled and third-party information.

03

CONTRACT AND REQUIREMENTS REVIEW

ASK EARLY. CLARIFY EARLY. BUILD ONCE.



3.1 Requirement Review and Order Acceptance

Prior to beginning affected work, Suppliers shall review applicable Astrolab requirements and determine that they are understood and can be met. Applicable requirements may be communicated through Purchase Orders, Component Specifications, drawings/models, Quality Clauses, technical specifications, statements of work, referenced standards, approved deviations or other documents incorporated into the order.

3.2 Requirement Conflicts and Alternatives

Where requirements appear unclear, conflicting, technically inappropriate, or cannot reasonably be met, Suppliers shall notify Astrolab for clarification prior to proceeding with the affected work. Suppliers are encouraged to propose technically appropriate equivalent methods where they satisfy the intent; supplier proposed alternatives do not authorize deviation until accepted by Astrolab where approval is required.

3.3 Component Specifications

Component Specifications may communicate product specific technical, quality, verification, documentation and delivery requirements. Suppliers are expected to actively participate in draft review and raise manufacturability, verification, schedule, qualified process, objective evidence or equivalent method concerns.

3.4 Requirements Consumption Review

For selected products or suppliers, Astrolab may conduct a Requirements Consumption Review following Purchase Order placement. The purpose is confirmation and alignment before significant execution has occurred, not creation of new requirements after order placement. The review may include the PO, Component Specification, drawing/model, Quality Clauses, standards, inspections/tests, FAI, MIPs, source inspection, data package, schedule, sub-tiers, exceptions and open actions.



4.1 Supplier Responsibility

Suppliers remain responsible for conformity of products and services provided by its external providers.

Applicable Astrolab technical, quality, traceability, configuration, special process, change notification, documentation, and product assurance requirements shall be flowed to the appropriate sub-tiers when necessary to maintain conformity of the delivered product.

The method and depth of subtler control should be appropriate to the product, process, and associated risk. Astrolab does not expect identical controls to be applied uniformly throughout the supply chain where they do not add value.

4.2 Critical Sub-Tiers

Controls should scale with risk. Suppliers should understand which sub-tiers, processes, materials, or components represent meaningful risk to the product or program.

Criticality may be driven by technical complexity, single or limited source conditions, special processes, long lead material, capacity constraints, unique tooling or equipment, difficult to replace capability, product safety, qualification status, configuration sensitivity, or historical performance. Astrolab may request visibility into or participation in the evaluation of critical sub-tiers when warranted by product or program risk.

4.3 Value Chain Visibility

For selected critical products or suppliers, Astrolab may work with the Supplier to understand the value chain supporting the delivered product.

This may include major material and component sources, critical sub-tiers, special processors, manufacturing and inspection locations, long lead items, capacity constraints, unique equipment or tooling, production dependencies, alternate sources, and recovery lead times.

The objective is not disclosure for the sake of disclosure. The objective is to understand where meaningful technical, quality, capacity, and schedule risk exists so Astrolab and the Supplier can address it before it affects hardware or delivery.

Suppliers are expected to support reasonable value chain visibility while protecting proprietary, commercially sensitive, export controlled and third-party information.



5.1 Configuration Baseline

Suppliers shall control the configuration of products and process definitions necessary to ensure delivered products match the approved baseline.

5.2 Change Notification

Suppliers shall notify Astrolab before implementing a change that could reasonably affect form, fit, function, reliability, safety, qualification status, interchangeability, traceability, workmanship, acceptance evidence, delivery, or an approved manufacturing baseline. Administrative changes that do not affect the product do not require unnecessary notification nor approval cycles.

Examples may include:

- o Material changes
- o Process changes
- o Manufacturing location changes
- o Software or firmware changes
- o Inspection or test method changes
- o Tooling changes affecting product acceptance

Notification does not automatically mean the change is prohibited. Astrolab will determine whether additional review, verification, qualification or approval is necessary based on risk.

5.3 COTs & Supplier Controlled Design

Astrolab recognizes that suppliers of commercial or supplier-controlled products may manage configuration through product revision, Product Change Notification (PCN), End of Life (EOL), or equivalent industry processes.

Astrolab notification/approval is required where flowed requirements, interface requirements, qualified configuration, or contractual change controls are affected.

Astrolab does not expect suppliers to create customer-specific change systems where established controls provide equivalent configuration visibility.

5.4 Software and Firmware Configuration

Where software or firmware affects delivered product function, suppliers shall maintain configuration identification sufficient to identify the delivered version.

Software configuration controls may use the Suppliers existing development and release systems.

IDENTIFICATION, MATERIAL CONTROL AND TRACEABILITY

KNOW WHAT IT IS. KNOW WHERE IT CAME FROM.

6.1 Product Identification

Suppliers shall maintain product identification appropriate to the product and sufficient to preserve configuration, status, and traceability throughout manufacturing, inspection, storage, and delivery.

Identification may include part number, revision, serial number, lot, batch, heat, date code, work order, traveler, digital record, or other controlled identifier appropriate to the product and Suppliers manufacturing system.

The method of identification is not prescribed unless specifically required by the applicable product definition or Purchase Order. Supplier standard methods are acceptable when they provide clear and reliable linkage to the delivered product.

6.2 Material Traceability

Where material traceability is required, the Supplier shall maintain linkage between the delivered product and the applicable material heat, lot, batch, manufacturer, or other source identifier.

Traceability may be maintained through physical marking, travelers, work orders, ERP/MES records, lot control, serialized records, or other controlled methods.

Where required traceability is lost, the Supplier shall notify Astrolab rather than recreate pedigree through assumption. Positive Material Identification (PMI), testing, analysis, or other objective evidence may be proposed as part of a recovery or verification plan; however, technical verification does not recreate original material pedigree or lot traceability.

6.3 Material and Product Status

Suppliers shall maintain controls sufficient to distinguish conforming, nonconforming, expired, quarantined, awaiting inspection, or otherwise restricted material when the status is necessary to prevent unintended use.

Status may be controlled physically or electronically through the Supplier's existing inventory, ERP, MES, traveler, labeling, segregation or equivalent system.

6.4 Shelf Life & Time Sensitive Material

Shelf life and time sensitive materials shall be controlled in accordance with applicable manufacturer, specification or product requirements.

Controls should address identification, expiration or use by date, storage conditions, and prevention of unintended use after expiration.

6.5 Astrolab Furnished Material

Material or product furnished by Astrolab, its customers, or another designated source shall be identified and protected from loss, damage, degradation, unauthorized substitution, or unintended use while under Supplier control.

Any furnished material found damaged, incorrect, expired, unsuitable for use, or otherwise inconsistent with the expected condition shall be communicated to Astrolab for disposition as appropriate.

6.6 Material Substitution

Material, component, or product substitutions that could affect compliance with the applicable product definition shall not be implemented without appropriate technical evaluation and, where required, Astrolab concurrence.

Equivalent commercial sources, alternate manufacturers, or Supplier standard substitutions may be acceptable where permitted by the product definition and where applicable form, fit, function, performance, reliability, material, and interface requirements remain satisfied.

When there is uncertainty, engage Astrolab before substitution rather than after the hardware is built.

PRODUCT PROTECTION

PROTECT CONFORMITY AFTER YOU CREATE IT

7.1 General Protection

Product conformity does not end when manufacturing or inspection is complete. Suppliers shall protect product throughout the manufacturing, storage, internal movement, packaging, and shipment to prevent damage, degradation, contamination, or loss of conformity.

Controls shall be appropriate to the product, its sensitivities, intended application, and associated risk.

7.2 Foreign Object Damage & Debris

Suppliers shall maintain controls to prevent Foreign Object Debris and Foreign Object Damage appropriate to the product and manufacturing environment.

NAS412 or an equivalent FOD prevention approach may be used as appropriate.

Controls may include housekeeping, tool and hardware accountability, protective covers, controlled work areas, cleaning, inspection, inventory controls, or other methods appropriate to the operation.

Astrolab does not expect every Supplier or work area to operate at the same FOD control level. Controls should scale with the susceptibility of the product and consequence of contamination or foreign material.

7.3 Electrostatic Discharge (ESD) Protection

ESD sensitive products shall be identified and protected throughout applicable manufacturing, handling, inspection, storage, packaging, and transportation activities.

ANSI/ESD S20.20, IEC 61340, or an equivalent recognized ESD control system may be used.

Controls may include grounded workstations, personnel grounding, ESD protective packaging, environmental controls, monitoring, training, and other methods appropriate to the product and process.

ESD controls apply where ESD susceptibility exists; this requirement is not intended to impose unnecessary ESD controls on products that are not ESD sensitive.

7.4 Cleanliness and Contamination Control

Suppliers shall maintain cleanliness and contamination controls appropriate to the product and process.

Consideration should be given to particulate contamination, oils, moisture, fingerprints, machining debris, process residues, fibers, uncured materials, incompatible chemicals, and other contaminants, which could affect product performance, assembly bonding, coating, optical performance, electrical performance, or long term reliability.

Where specific cleanliness requirements are invoked by the drawing, Component Specification, Purchase Order, or other controlled requirement, those requirements shall be maintained.

Otherwise, Supplier standard cleanliness practices are acceptable when they provide appropriate protection.

MANUFACTURING, WORKMANSHIP AND SPECIAL PROCESSES

PROCESS CONTROL IS PRODUCT CONTROL

8.1 Manufacturing General

Suppliers shall plan and control manufacturing processes necessary to consistently produce product conforming to applicable Astrolab requirements.

Manufacturing controls should be appropriate to the product, process complexity, criticality, maturity, and associated risk. Astrolab recognizes that effective production systems may look different across aerospace manufacturers, commercial suppliers, specialized processors, and established high-rate production environments.

The expectation is not a specific manufacturing system; the expectation is a controlled process capable of producing conforming hardware.

8.2 Manufacturing Process Control

Suppliers shall maintain appropriate controls over manufacturing activities that affect product conformity.

Controls may include work instructions, travelers, routers, digital work instructions, drawings, models, process specifications, controlled machine programs, tooling, fixtures, process parameters, inspection points, acceptance criteria, or other Supplier controlled methods.

The level of documentation should be appropriate to the complexity and risk of the operation.

Where manufacturing depends on specific parameters, sequences, tooling, environmental conditions, or other process variables necessary to achieve conformity, those controls shall be identified and maintained.

8.3 Workmanship

Products shall be manufactured to the workmanship requirements defined by the applicable drawing, Component Specification, Purchase Order, invoked workmanship standard, or other controlled technical requirement.

Where a specific workmanship standard is not invoked, Supplier standard workmanship criteria or an appropriate industry recognized equivalent may be used provided the resulting product meets applicable technical and acceptance requirements.

Applicable standards may include J-STD-001, IPC 610, IPC WHMA A 620, NASA workmanship standards, or other recognized industry standards depending on product and application.

8.4 Personnel Competency

Personnel performing operations where skill, qualification, or certification materially affects product conformity shall be appropriately trained and qualified for the work performed.

Qualification may be established through industry certification, Supplier training and authorization, demonstrated competency, experience, or other appropriate methods unless a specific certification is contractually required.

Records of required qualifications shall be maintained and available for review when applicable.

8.5 Equipment, Tooling & Process Infrastructure

Manufacturing equipment, tooling, fixtures, software, programs, and other production resources that affect product conformity shall be suitable for their intended use and appropriately maintained.

Where tooling or equipment establishes or controls an acceptance characteristic, the Supplier shall maintain sufficient control to ensure continued suitability.

Changes, damage, deterioration, repair, relocation, software/program updates, or other conditions that could affect the output of critical tooling or equipment should be evaluated before continued use.

8.6 Special Processes

Processes where the resulting output cannot be fully verified by subsequent inspection or test shall be appropriately controlled and, where applicable, qualified or validated.

Special processes may include welding, brazing, soldering, heat treatment, plating, anodizing, coating, chemical processing, bonding, nondestructive testing, additive manufacturing, or other processes where process execution materially determines final product conformity.

Where Astrolab invokes a specific process specification, accreditation, qualification, or approved processor requirement, that requirement shall apply.

Where an equivalent process, specification, accreditation, or control method is proposed, the Supplier shall engage Astrolab before implementation when the alternative could affect technical compliance or qualification.

8.7 External Special Processing

Suppliers remain responsible for special processes performed by external processors or sub-tiers.

Applicable technical requirements shall be flowed to the processor, and the Supplier shall maintain appropriate evidence that the required process was performed.

Where Nadcap accreditation is specifically invoked, the applicable Purchase Order quality Clause governs.

Astrolab may consider alternate processors or equivalent process controls when technically justified and coordinated in advance.

8.7 In Process Verification

Where a characteristic, condition, or manufacturing result will become inaccessible or impractical to verify later in the manufacturing sequence, the Supplier should perform verification at an appropriate point in the process.

Examples may include concealed interfaces, internal features, pre closeout workmanship, bond preparation, embedded component, internal torque or retention features, cleanliness conditions, or characteristics subsequently altered or obscured by processing.

Verification may use inspection records, process data, photographs, automated equipment records, travelers, witness points, or other appropriate objective evidence.

Do not wait until final inspection to verify something that can no longer be meaningfully inspected.

8.8 Process Changes & Deviations

Manufacturing or process changes that could reasonably affect product conformity, qualification, reliability, workmanship, or previously established acceptance evidence shall be evaluated in accordance with the change control requirements of this manual.

Where a Supplier cannot manufacture to the applicable technical requirement, the condition shall be communicated to Astrolab through the appropriate deviation or SRI process rather than incorporated into the product without authorization.

The presence of an issue does not automatically mean production must indefinitely, surface the condition, protect affected hardware, and establish the path forward with Astrolab.

8.9 Process Performance & Improvement

Suppliers are encouraged to use process capability, statistical process control, automated process data, first pass yield, defect trends, inspection results, or other performance information where these methods provide meaningful insight into manufacturing performance.

Demonstrated process capability and consistent performance may support reduced inspection or other risk-based controls when coordinated with Astrolab.

The objective is to move assurance upstream into the process, rather than relying exclusively on final inspection to find problems after the hardware has already been built.

INSPECTION, TEST AND ACCEPTANCE

TIGHTEN THE FEEDBACK LOOP

9.1 Inspection, Test & Acceptance

Suppliers shall perform inspection, test, and other verification activities necessary to demonstrate that delivered product conforms to applicable requirements.

Verification should occur at the point where it provides the greatest assurance and technical value. Final inspection is an important control, but it should not be the first time conformity is evaluated.

Inspection and test methods may include physical inspection, dimensional measurement, functional test, automated test, analysis, process data, qualification evidence, certificates, digital records, or other objective evidence appropriate to the requirement.

The goal is confidence in conformity; not generation of inspection paperwork.

9.2 Inspection Planning

Suppliers shall plan inspection and verification activities appropriate to the product, manufacturing process, applicable requirements, and associated risk.

Inspection planning should consider:

- o Key, critical, interface and acceptance characteristics
- o Characteristics that become inaccessible alter in manufacturing
- o Process capability and demonstrated performance
- o Product maturity and production history
- o Automated or process generated verification data
- o Supplier standard acceptance testing
- o Applicable Astrolab Quality Clauses
- o Known technical or manufacturing risk

9.3 Inspection & Measurement

Inspection shall use methods and equipment suitable for the characteristic being evaluated and capable of determining conformity to the applicable acceptance criteria.

Inspection results should be traceable to the product, lot, batch, serial number, work order, or other appropriate product identifier where necessary to maintain acceptance evidence.

Where quantitative measurement is required, actual measurement results should be retained when required by the applicable Purchase Order, Quality Clause, Component Specification, or Supplier quality system.

9.4 Inspection & Test Equipment

Inspection, measuring, and test equipment used to establish product acceptance shall be suitable for its intended use and appropriately controlled.

Applicable equipment shall be calibrated, verified, validated, or otherwise demonstrated capable of supporting the intended measurement or test.

Traceability to NIST or another recognized national or international measurement standard shall be maintained where such standards exist and are applicable.

For custom fixtures, automated test equipment, software-based measurement systems, or other systems where traditional calibration is not appropriate, documented verification or validation may be used to establish suitability.

9.5 Test & Functional Verification

Where product requirements are verified through test, the Supplier shall perform testing using appropriate procedures, equipment, acceptance criteria, and configuration controls.

Test evidence should identify the applicable Unit Under Test and provide sufficient information to determine whether the applicable requirement was satisfied.

Supplier standard ATPs, ATRs, automated test outputs, qualification reports, characterization data, or equivalent evidence may be acceptable where they demonstrate conformity to the applicable requirement.

Existing technically applicable evidence should be used where appropriate rather than repeating testing solely to create a new Astrolab specific record.

9.6 In Process & Pre Closeout Verification

Characteristics that will become inaccessible, obscured, or impractical to verify after subsequent processing or assembly should be inspected at the appropriate point in the manufacturing sequence.

This may include internal workmanship, concealed interfaces, fastener installation, secondary retention, internal routing, cleanliness, bonding preparation, embedded components, internal dimensions, or other conditions that cannot be meaningfully evaluated after closeout.

Evidence may include inspection records, photographs, process records, automated data, witness points, or other appropriate methods.

Astrolab may establish Mandatory Inspection Points or Source Inspection activities for selected higher risk operations.

9.7 Acceptance Evidence

Suppliers shall maintain objective evidence sufficient to demonstrate product acceptance.

The required evidence may vary based on product and contractual requirements and may include inspection records, test reports, FAIRs, certifications, Certificates of Conformance, process records, photographs, automated data, configuration records, or equivalent evidence.

Astrolab does not require duplication of the same evidence across multiple documents when the applicable requirement and acceptance result are clearly identifiable and traceable.

9.8 Inspection or Test Failures

Product that fails an applicable inspection or test requirement shall be appropriately identified and controlled.

Retest, reinspection, rework, repair, or subsequent passing results shall not replace or obscure a previously identified failure. The Supplier shall retain appropriate evidence of the original condition and evaluate the failure to the extent necessary to establish product conformity and determine whether additional action is required.

The depth of evaluation should be appropriate to the nature, recurrence, and potential impact of the failure.

Where a failure could affect delivered product, configuration, reliability, or previously accepted hardware, the Supplier shall evaluate the scope and communicate with Astrolab as appropriate.

9.9 Astrolab Verification

Astrolab reserves the right to perform or witness inspection and test activities when appropriate based on product or supplier risk.

Verification may occur at the Supplier, a sub tier, Astrolab, or remotely through review or witnessing of objective evidence.

Astrolab verification does not relieve the Supplier of responsibility for product conformity.

Detailed Source Inspection requirements, when invoked, are addressed through the applicable Purchase Order Quality clause.

FIRST ARTICLE AND PRODUCTION READINESS

VERIFY THE BASELINE BEFORE YOU SCALE IT

10.1 First Article Inspection

Where invoked, FAI shall demonstrate that the production process can produce product conforming to the design definition. AS9102 or aerospace industry equivalent may be used. Unmodified COTS/catalog items are not subject to FAI unless specifically required; modified COTS requires evaluation of the modification and affected characteristics.

10.2 Partial / Delta FAI

Where a valid FAIR exists and subsequent change affects only a portion of the product or manufacturing baseline, a partial/delta FAIR may be used where appropriate.

10.3 Production Readiness

For selected critical products, Astrolab may review readiness including material availability, tooling, personnel, process qualification, inspection/test readiness, sub-tiers, schedule, capacity and closure of open technical/quality actions.

NONCONFORMING PRODUCT AND CORRECTIVE ACTION

CONTAIN FAST. UNDERSTAND. PREVENT RECURRENCE.

11.1 Nonconforming Product

The Supplier shall identify, control and disposition nonconforming product to prevent unintended use or shipment. Known nonconforming product shall not be shipped without applicable Astrolab authorization.

11.2 Issue and Escape Notification

Notify Astrolab promptly when a condition may affect delivered or in process Astrolab product. Supplier Development will coordinate formal supplier communication, Issue Tickets, CARs, containment and recovery as appropriate.

11.3 Corrective Action

Corrective action shall scale to the problem and risk. Effective response normally includes containment, extent of condition, root cause, corrective action, implementation and effectiveness verification.

11.4 Deviations / SRI / Authorized Departures

Approved Deviations, SRIs, waivers, concessions or other Astrolab authorized departures applicable to delivered product shall be identified and included with, or clearly traceable to, the applicable shipment documentation.

ELECTRONICS, COUNTERFEIT PREVENTION AND MATERIAL AUTHENTICITY

AUTHENTIC PARTS. CONTROLLED WORKMANSHIP

12.1 Counterfeit Prevention

Maintain a counterfeit prevention approach appropriate to product risk. AS5553, AS6174, or equivalent recognized frameworks may be used where applicable. Controls should prioritize original manufacturers, authorized sources or otherwise qualified sources with appropriate authenticity evidence.

12.2 Electronic Workmanship

Depending on product and scope, invoked criteria may include J-STD-001, IPC-A-610, IPC/WHMA-A-620, IPC-A-600, IPC-7711/7721, applicable space addenda, NASA workmanship standards, or equivalent requirements specifically accepted for the product.

12.3 Material and Finish Risks

Where applicable, control risks associated with pure tin/tin whiskers, solderability, red plague/cuprous oxide risk, plating/finish compatibility, prohibited materials and other electronics material concerns when specifically invoked by product requirements.

RECORDS, DATA PACKAGES AND DIGITAL EVIDENCE

EVIDENCE SHOULD BE EASY TO FIND

13.1 Quality Records

Maintain legible, identifiable and retrievable records sufficient to demonstrate conformity and required traceability for the period defined by contract or applicable requirements.

13.2 Electronic Quality Documentation

Astrolab's preferred method for quality documentation is electronic submission to supplierqualitydocuments@astrolab.space, preferably in advance of shipment. The email subject should reference the Purchase Order and applicable PO Line Item(s). Early submission gives Astrolab an opportunity to review and resolve documentation questions before hardware arrives.

13.3 Advance Review Is Not a Shipment Gate

Unless specifically invoked as a hold point or contractual requirement, advance documentation review does not gate shipment. Administrative or format issues should be resolved through the documentation process and should not automatically create an Issue Ticket or product nonconformance where product conformity can otherwise be established.

13.4 End Item Data Packages

Where an EIDP is required, the expected package should support as built configuration, acceptance and traceability. Tailoring is permitted with Astrolab concurrence when an element is not applicable, not normally generated, unavailable, or can be satisfied through equivalent objective evidence. Suppliers shall coordinate proposed reductions or alternatives rather than silently omitting required deliverables.

13.5 Digital Evidence

ERP, MES, PLM, QMS, electronic travelers, digital inspection outputs, CMM/PCMM reports, controlled PDFs and equivalent systems are acceptable where they provide effective control, traceability and objective evidence.

DELIVERY, SOURCE INSPECTION AND SUPPLIER RELEASE

VERIFY AT THE SOURCE WHEN IT CREATES VALUE

14.1 Delivery Readiness

Prior to shipment, verify product acceptance status, required documentation, configuration, traceability, preservation, packaging and applicable authorized deviations.

14.2 Source Inspection

Astrolab or its authorized designee may perform source inspection onsite or remotely at appropriate points in the process. Supplier generated evidence may be used where sufficient. Source inspection does not relieve the Supplier of responsibility for conformity.

14.3 Mandatory Inspection Points

Where MIPs, hold points or witness points are established, the Supplier shall provide required notification and shall not proceed beyond a mandatory hold point without release unless otherwise authorized.

14.4 Dock to Stock and Delegated Inspection

Astrolab may reduce receiving inspection or delegate selected verification based on demonstrated supplier performance, process capability, objective evidence and risk. Delegation does not transfer responsibility for conformity.

SUPPLIER PERFORMANCE, DEVELOPMENT AND IMPROVEMENT

HIGH TOUCH WHERE IT MATTERS

15.1 Performance

Astrolab may monitor quality, on time delivery, responsiveness, milestone adherence, documentation, action closure and other indicators relevant to supplier execution.

15.2 Supplier Development

Supplier Development is intended to be a partner and source of truth between the Supplier and Astrolab. Engagement may include onsite support, capability/capacity assessment, schedule verification, risk reduction, source inspection, recovery planning, process improvement and requirements alignment.

15.3 Risk and Action Plans

Critical suppliers or products may use joint risk registers, Supplier Development Plans, action plans or integrated schedules. The intent is early visibility, ownership and closure.

15.4 Continuous Improvement and Recognition

Astrolab expects suppliers to improve recurring weaknesses and may recognize high performing suppliers through preferred status, reduced inspection, delegated verification or other recognition.

ETHICS, PRODUCT SAFETY AND COMPLIANCE

ACCURATE RECORDS. SAFE PRODUCT. EARLY SIGNALS.

16.1 Product Safety and Awareness

Personnel performing work affecting Astrolab product should understand their contribution to product conformity and product safety, and the importance of ethical behavior and accurate records.

16.2 Ethical Behavior and Records

Falsification, intentional misrepresentation, concealment of known nonconformance, substitution without authorization, or alteration of quality records is unacceptable.

16.3 Regulatory, Export and Customer Requirements

Suppliers shall comply with applicable laws, regulations, export controls and customer/government requirements when flowed contractually. When a requirement is unclear or conflicts with another controlled requirement, seek clarification before proceeding.

PURCHASE ORDER QUALITY CLAUSES

SPECIFIC CONTRACTUAL CONTROLS WHEN INVOKED

SUPPLIER QUALITY MANUAL

A. Purchase Order Quality Clauses

Relevant Quality Clauses apply only when referenced by the Purchase Order or other controlled contractual document.

QC01 | Certificate of Conformance

The Supplier shall provide a Certificate of Conformance with each shipment certifying that the products or services provided conform to the applicable Purchase Order requirements.

The Certificate of Conformance shall include, as applicable

- o Supplier Name
- o Astrolab PO Number
- o Astrolab part number and revision
- o Quantity shipped
- o Serial number, lot number, batch number, date code, or other applicable product identification
- o Applicable deviation/SRI identification
- o Authorized Supplier representative name, signature, or equivalent electronic authorization

Where additional certifications, test reports, material certifications, inspection records or other objective evidence are required, those requirements will be identified separately by the Purchase Order, Component Specification or applicable Quality Clause.

QC02 | First Article Inspection Report (FAIR)

The Supplier shall perform and provide a First Article Inspection in accordance with the current revision of AS9102, or aerospace industry equivalent, demonstrating verification of applicable product design characteristics and requirements.

A full FAIR is required for the initial production configuration unless objective evidence demonstrates that an applicable and valid FAIR has previously been completed.

Where a valid FAIR exists and a subsequent change affects only a portion of the product or manufacturing baseline, a partial/delta FAIR may be provided in lieu of a new full FAIR, provided the Supplier identifies the change and verifies all characteristics affected by the change.

Changes requiring evaluation for full or partial FAI include, as applicable, changes to design or drawing revision, manufacturing source or location, manufacturing process or method, material, tooling, special process, numerical control program, or other changes capable of affecting product conformity.

Even in instances of QC02 being specified, unmodified COTS and standard catalog items are not subject to FAI. Where a COTS/catalog item is modified to satisfy Astrolab requirements, FAI applies to the modification and affected characteristics.

The FAIR unit shall be identifiable and traceable to the FAIR. AS9102 forms, Supplier forms or equivalent electronic formats are acceptable when required information and objective evidence are captured.

QC03 | Product Inspection and Acceptance Data

The Supplier shall perform and provide inspection and acceptance data demonstrating conformity of the delivered product to the applicable product definition and acceptance requirements.

Unless otherwise approved by Astrolab, the default requirement is verification of 100% of applicable inspectable characteristics for 100% of the delivered quantity.

Applicable characteristics may be defined by the drawing, model, SCD, envelope/interface drawing, Component Specification, Purchase Order or other applicable product definition. Where a characteristic becomes inaccessible after subsequent processing or assembly, verification may be performed in process with traceable records.

Detail/Piece Parts

For detail parts or products defined primarily by dimensional requirements, inspection shall include, as applicable:

- o Dimensional characteristics and tolerances
- o Geometric tolerances
- o Drawing note requirements subject to inspection
- o Interface features
- o Key or critical characteristics
- o Other measurable acceptance requirements

Assemblies & Supplier Controlled Products

For assemblies, COTS based products, supplier designed products, box builds, or products controlled through an SCD, envelope/interface drawing, or similar product definition, inspection and acceptance shall verify the applicable characteristics within Astrolab's defined acceptance boundary.

This may include, as applicable:

- o Envelope dimensions
- o Mounting and interface features
- o Connector type, location, orientation and keying
- o Electrical interfaces
- o Mechanical interfaces
- o Mass or other physical properties
- o Identification and marking
- o Configuration
- o Workmanship
- o Functional characteristics
- o Required inspection or test results
- o Other characteristics specifically defined as Astrolab acceptance requirements

QC03 does not require inspection or reporting of internal supplier-controlled characteristics that are not part of the applicable Astrolab product definition or acceptance requirements.

Inspection Records

Inspection results shall be traceable to the applicable product and requirement and shall include, as applicable:

- o Requirement or characteristic identification
- o Nominal value and tolerance or acceptance criteria
- o Actual measured result
- o Pass/fail or equivalent acceptance result where numerical measurement is not appropriate
- o Part, serial number, lot, or other product identification sufficient to establish traceability

Inspection data may be provided using AS9102 Form 3, Supplier inspection reports, CMM reports, digital inspection outputs, annotated drawings, test or acceptance reports, or an equivalent format, provided the evidence clearly demonstrates conformity to the applicable requirement.

Where conformity is more appropriately demonstrated through a material certification, process certification, functional test, acceptance test, or other objective evidence, that evidence may be used rather than duplicating the requirements as dimensional inspection data.

Alternative Inspection Plans

Astrolab may approve an alternative inspection plan when the Supplier can demonstrate that the proposed approach provides sufficient objective evidence of product conformity while reducing unnecessary inspection, cost, or lead time.

Alternative approaches may include, as appropriate:

- o First and last piece inspection
- o First piece plus defined sampling
- o Key or critical characteristic inspection
- o Reduced inspection based on demonstrated process capability
- o Inspection focused on interface or acceptance characteristics
- o Automated process or test data
- o Supplier standard acceptance testing
- o Other risk-based inspection methods

The Supplier shall submit the proposed alternative prior to shipment or implementation of the reduced inspection plan and provide sufficient rationale and objective evidence for Astrolab evaluation.

Supporting evidence may include:

- o Historical inspection results
- o Previous FAIR or inspection data
- o Process capability or SPC data
- o Demonstrated process stability
- o Manufacturing method and level of automation
- o Previous delivery performance
- o Product maturity or product history
- o Supplier quality performance
- o Characteristic criticality
- o Ability to detect nonconformance through subsequent test or verification
- o Other evidence demonstrating that the proposed inspection adequately controls product risk

Reduced inspection is not automatically granted and shall not be implemented solely for cost or schedule benefit without sufficient evidence that product conformity remains adequately assured.

Once approved, the alternative inspection plan may remain applicable to subsequent deliveries within the approved scope unless otherwise limited by Astrolab or invalidated by a significant change, quality issue, process change, lapse in production, or adverse supplier performance.

QC04 | Test and Acceptance Data

The Supplier shall provide objective test or acceptance data demonstrating conformity to the applicable drawing, Component Specification, Purchase Order, test specification or other invoked technical requirement.

Test data shall be traceable to the applicable Unit Under Test (UUT) and the UUT shall be traceable to the applicable PO Line item.

The test record shall include, as applicable:

- o Part number and revision
- o UUT serial number, lot, batch, or equivalent identifier
- o Test procedure specifications, or requirement
- o Applicable test conditions
- o Acceptance criteria or limits
- o Actual recorded test results
- o Pass/fail status
- o Date of test
- o Test equipment or test system identification
- o Applicable software or test configuration where necessary to establish validity

Actual Data vs Pass/Fail

Where the applicable requirement establishes a quantitative acceptance limit, actual measured results shall be provided unless otherwise approved by Astrolab. For requirements appropriately verified through a qualitative, functional, go/no go, automated acceptance, or other nonnumeric method, pass. Fail or equivalent evidence is acceptable when it clearly demonstrates conformity.

Test Equipment

Inspection and test equipment used to generate acceptance data shall be suitable for its intended use and maintained under an effective calibration, verification, or validation system.

Where national or international measurement standards exist, measurement equipment shall be traceable to NIST or another recognized national/international measurement standard, as applicable.

Where conventional calibration traceability is not applicable, such as certain automated test equipment, custom fixtures, software-based test systems, simulators, or functional test equipment, the Supplier may use documented validation or verification controls sufficient to demonstrate the test system is capable of producing valid acceptance results.

Supplier Standard Test Reports

Supplier standard test reports, Acceptance Test Procedure/Acceptance Test Report outputs, automated test reports, electronic test data, or equivalent formats are acceptable provided they contain sufficient information to demonstrate conformity and satisfy the traceability requirements of this clause.

Astrolab specific report formats are not required unless specifically invoked.

Retest/Troubleshooting

Where an initial test result fails to meet acceptance criteria, subsequent passing test results shall not be used to obscure or replace the original failure.

The Supplier shall retain the applicable failure evidence and document the disposition, troubleshooting, rework, repair, retest, or other action sufficient to establish why the final result is considered acceptable.

Routine test interruptions or invalid tests caused by verified errors unrelated to the product performance are not deemed a failure. For example, if a technician started a test, realized they input the incorrect serial number, cancelled the test, and retested, that is permissible.

Supplier standard ATP/ATR outputs, automated reports and electronic data are acceptable. Initial failures shall not be obscured by subsequent passing results; applicable failure evidence and disposition shall be retained.

Existing qualification, characterization, lot acceptance or other technically applicable evidence may be proposed in lieu of repeating testing when it demonstrates applicability to the delivered configuration and requirement.

QC05 | Raw Material Certification and Traceability

For raw material shipments, or material procured by the Supplier and incorporated into Astrolab product, the Supplier shall maintain and provide objective evidence demonstrating conformity to applicable material requirements and traceability to the original material manufacturer or mill.

This requirement applies, as applicable, to raw material including bar, plate, sheet, tubing, forgings, castings, extrusions, or other material forms specifically controlled by material specification.

Material certification shall be legible and shall include, as applicable:

- o Material specification, grade, allow and condition
- o Heat, lot, batch, melt or equivalent material identifier
- o Original material manufacturer or mill
- o Chemical composition when required by the applicable material specification
- o Mechanical or physical properties when required by the applicable material specification
- o Heat treatment condition where applicable
- o Applicable test results required by the material specification

Material Through Distribution

Material procured through distribution is acceptable provided unbroken traceability to the original manufacturer or mill is maintained.

A distributor Certificate of Conformance may be used to establish the chain of custody between the Supplier and original material source; however certification alone shall not replace original manufacturer or mill certification when QC05 requires original material certification.

When multiple distributor or intermediaries are involved, records shall provide sufficient linkage to establish the chain of traceability back to the original manufacturer or mill.

Secondary Processing

Where material condition is established or altered through secondary processing prior to incorporation into Astrolab product, applicable process certifications shall be provided when necessary to establish the final material condition.

This may include, as applicable:

- o Heat treatment
- o Solution treatment or aging
- o Annealing
- o Stress relief
- o Conversion or other processing affecting the certified material condition

The applicable process record shall maintain traceability to the original material heat, lot, batch, or equivalent identifier.

Material Identification Through Processing

Where material traceability is required, the Supplier shall maintain the relationship between the original material certification and the resulting Astrolab product throughout manufacturing.

When material is cut, divided, processed, or converted into individual parts, traceability may be maintained through:

- o Physical material marking
- o Controlled traveler/work order
- o Lot or batch control
- o Electronic ERP/MES records
- o Controlled remnant identification
- o Other equivalent methods providing positive linkage

The original heat/lot identifier does not need to be physically marked on every individual part unless specifically required by the drawing, PO, Component Specification, or other contractual requirement.

Where traditional mill/manufacturer certification is not generated, equivalent objective evidence may be proposed for Astrolab concurrence. Lost traceability shall not be recreated through assumption; technical verification such as PMI (Positive Material Identification) may be proposed but does not automatically recreate full pedigree.

QC06 | DELETED

QC07 | DELETED

QC08 | Astrolab Source Inspection

When invoked, Astrolab Source Inspection is required prior to shipment.

The Supplier shall provide Astrolab reasonable access to the product, applicable manufacturing and inspection areas, records, personnel, and objective evidence necessary to verify conformity to the applicable PO and product requirements.

Source Inspection may be performed in-process, at defined manufacturing or inspection points, prior to product closeout, or following final acceptance, as appropriate to the product and associated risk.

Source Inspection may include, as applicable:

- o Product inspection or verification

- o Witnessing Supplier inspection or test activities
- o Verification of key, critical, interface or other selected characteristics

Source Inspection may be onsite or, when authorized by Astrolab, remote through review of electronic records, photographs, video, live inspection/test witnessing, digital measurement data, FAIRs, certifications or other objective evidence.

Source Inspection may include product verification, witnessing inspection/test, verification of selected characteristics, in process or pre closeout inspection, workmanship, configuration/traceability, certifications, FAIR/acceptance documentation, packaging/preservation and final documentation review.

Where MIPs, hold points, witness points or notification lead times are established, the Supplier shall coordinate accordingly and shall not proceed beyond a mandatory hold point without release from Astrolab or its authorized designee unless otherwise authorized.

Supplier generated evidence may be used as part of Source Inspection. Successful source inspection authorizes progression or shipment only within the inspected scope and does not constitute final acceptance or relieve the Supplier of responsibility for conformity. Changes after inspection that could invalidate the basis of release shall be communicated to Astrolab.

QC09 | DELETED

QC10 | DELETED

QC11 | Special Handling and Controlled Product

The requirements of this clause apply only when the product, material, or component being delivered to Astrolab is itself subject to the applicable special handling or control condition. Requirements within this clause do not automatically extend to constituent materials, components, consumables, or processing materials by the Supplier to manufacture a higher level delivered item.

For example:

- o Shelf-life requirements apply when Astrolab is receiving shelf-life controlled material as the deliverable item. They do not require reporting of shelf-life controlled adhesives, chemicals, compounds, consumables, or other materials used by the Supplier during manufacture of a completed assembly or higher level product.
- o ESD requirements apply when the delivered product requires ESD protection during handling, storage, packaging, or transportation.
- o Hazardous material requirements apply when the delivered product or shipment is subject to applicable hazardous or regulated material controls.
- o EEE component age requirements apply when Astrolab is procuring the applicable EEE component as an individual deliverable item. They do not automatically apply to EEE components incorporated within a completed assembly, COTS item, or supplier designed product.

Shelf Life & Limited Material

When Astrolab is procuring shelf life or limited life controlled material as the deliverable item, the Supplier shall maintain identification and controls sufficient to establish the applicable manufacturer date, lot, or batch identification, expiration date or defined shelf life, and required storage conditions.

Unless otherwise specified or approved by Astrolab, shelf-life controlled material shall have a minimum of 80% of its original shelf-life remaining at the time of receipt by Astrolab.

Temperature and Environmentally Controlled Material

When the delivered product requires temperature, humidity, moisture, light, atmospheric or other environmental control, the Supplier shall maintain the applicable conditions through storage, handling, packaging, and transportation to Astrolab.

Electrostatic Discharge Sensitive Product

When the delivered product is ESD sensitive, the Supplier shall provide appropriate ESD protection through applicable handling, storage, packaging, and transportation activities.

ANSI/ESD S20.20, IEC 61340, or an equivalent recognized ESD control system may be used as applicable. Moisture sensitive electronic devices may be controlled in accordance with J STD 033 or equivalent where applicable.

ESD protective packaging shall maintain the required level of protection through delivery to Astrolab. This requirement applies to ESD sensitive of the delivered product and does not independently impose ESD controls on products that are not ESD sensitive.

Miscellaneous

Other product sensitivities such as optical surfaces, cleanliness-controlled hardware, sensitive coatings, ports, bearings, mechanisms, shock/orientation sensitive equipment or environmental controls shall be protected using appropriate manufacturer, industry or equivalent Supplier controls. Special receiving/unpacking/storage instructions shall be communicated when needed to prevent damage or degradation.

QC12 | Assembly Build and End Item Data Package (EIDP)

When invoked, the Supplier shall provide an end item build and as built data package supporting final product acceptance and configuration traceability.

The data package may be transmitted electronically or provided with the shipment, as coordinated with Astrolab. Electronic submission (in advance of product shipment) is preferred where practical.

The package shall contain the following as applicable to the delivered product and requirements.

As Built Configuration

Sufficient information to establish the delivered configuration, including as applicable.

- End item part number and revision
- End item serial number or lot/batch identification
- AS built parts list or equivalent configuration record
- Installed part numbers and revisions
- Serial numbers where serialization is required
- Lot, batch, or date codes where traceability is required
- Software or firmware configuration
- Incorporated engineering changes
- Approved substitutions
- Other configuration information necessary to identify the delivered build

Supplier standard BOM, ERP/MES configuration report, serialized as built report, traveler output, or equivalent electronic record is acceptable provided it establishes the required as-built configuration.

Material and Component Traceability

The package shall include applicable traceability records required by the PO, Component Specification, drawing or other Quality Clauses. This may include

- o Material certifications
- o Component traceability
- o Manufacturer/sub-tier Certificate of Conformance
- o Special process certifications
- o Lot/date code information
- o Life limited or shelf-life controlled material information

Sub-tier certifications are required when necessary to demonstrate compliance with an applicable Astrolab requirement or maintain required product traceability; QC12 does not require inclusion of every sub-tier purchasing record where it provides no additional acceptance or traceability value.

Manufacturing, Inspection and Test Evidence

When required for final acceptance, the package shall include applicable

- o FAIR
- o Inspection results
- o Acceptance or functional test results
- o Special process records
- o Required workmanship or process verification
- o Source Inspection/MIP records
- o Other objective evidence specifically required by the product definition or Purchase Order

Records already provided under another Quality Clause do not need to be duplicated within the QC12 package provided they are clearly identifiable and accessible as part of the delivered acceptance record.

Changes And Nonconformance

The data package shall identify, as applicable

- o Incorporated engineering changes
- o Approved deviations or waivers applicable to the delivered configuration
- o Approved nonconformance dispositions applicable to delivered product
- o Other authorized departures from the baseline product requirements

Data Package Format

The Supplier may use its existing documentation and business systems to satisfy QC12. Acceptable formats may include ERP/MES exports, electronic travelers, Supplier build books, serialized configuration reports, electronic data packages, controlled PDF records, or other equivalent formats that provide the required objective evidence. Astrolab specific templates are not required unless specifically invoked. The data package shall be sufficiently complete and legible to support product acceptance.

EIDP Applicability and Tailoring

The EIDP requirements identified within QC12 represent Astrolab's standard expected data package when this clause is invoked. QC12 defines the default EIDP. Tailoring is permitted with Astrolab concurrence; engage early when a required record is not applicable, unavailable, or proposed to be satisfied through alternate evidence.

Astrolab recognizes that the availability, format, and applicability of individual records may vary based on product type, Supplier manufacturing model, existing Supplier systems, COTS or catalog status, and the nature of the product being delivered.

When an identified EIDP element is not applicable, not normally generated by the Supplier, is unavailable for the product being provided, or the Supplier proposes an alternate form of objective evidence, the Supplier shall communicate the proposed exception or alternative to Astrolab for review.

Astrolab may approve a reduced, tailored, or equivalent EIDP when the proposed package provides sufficient objective evidence to support product acceptance, configuration identification, and required traceability.

Alternative evidence may include Supplier standard build records, ERP/MES outputs, configuration reports, acceptance test records, Certificates of Conformance, manufacturer documentation or other technically appropriate records.

The supplier shall not omit an applicable QC12 deliverable without coordination with Astrolab solely because the record is not part of its standard data package.

Any agreed tailoring, exclusions, or alternative evidence should be documented through the applicable Purchase Order, Component Specification, Supplier Deviation Report or other Astrolab approved method.

QC13 | Packaging, Preservation and Shipping Protection

The Supplier shall package, preserve and protect product to prevent damage, degradation, contamination, FOD, loss of identification, or loss of required environmental control through normal handling, transportation, storage and Astrolab receipt.

Packaging shall be appropriate to the product, its sensitivities and expected transportation/handling environment.

Unless otherwise specified, Supplier standard commercial, aerospace, military, manufacturer recommended or equivalent practices are acceptable where they provide adequate protection. ASTM D3951, MIL-STD-2073-1, ANSI/ESD S20.20, IEC 61340, J-STD-033 or equivalent standards may be used as applicable.

For products requiring specialized packaging or preservation beyond routine commercial practices, the Supplier shall communicate its intended packaging approach to Astrolab prior to the initial shipment. Supplier standard packaging specifications, work instructions, photographs, drawings or equivalent documentation are acceptable.

Where Astrolab specifies a packaging method and the Supplier cannot meet it or proposes an equivalent/improved alternative, notify Astrolab prior to shipment and obtain concurrence. Special receiving, storage, unpacking, environmental, lifting, orientation, ESD, cleanliness or other handling requirements shall be clearly identified.

Product damaged or potentially degraded during packaging, handling or transportation shall be treated as potentially nonconforming and communicated when conformity may be affected. Astrolab may verify packaging/preservation under QC08 or a designated MIP.

QC14 | Temperature Controlled and Limited Shelf-Life Material

When invoked for temperature controlled or limited shelf-life material, the Supplier shall maintain the material to applicable manufacturer, specification or product defined storage/handling requirements through delivery to Astrolab.

The Supplier shall provide, as applicable

- o Manufacturer/cure date and lot or batch identification
- o Expiration date or defined shelf life
- o Required storage temperature or environmental limits
- o Remaining shelf life at time of delivery
- o Applicable storage or transportation records necessary to demonstrate compliance

Unless otherwise specified or approved, material shall have at least 80% of original shelf-life remaining upon Astrolab receipt. Material below 80% may be accepted with prior Astrolab concurrence based on remaining usable life, intended use, storage history, availability or other technically appropriate evidence.

Where temperature-controlled transportation is required, use packaging/shipping methods appropriate to maintain limits. Temperature monitoring data shall be provided when specifically required or necessary to demonstrate conditions were maintained. Known excursions that may affect conformity shall be communicated for evaluation.

QC15 | Supplier and Sub-Tier Certifications

When certifications or compliance documentation are received by the Supplier from a manufacturer, distributor, processor, or other sub-tier for an item incorporated into the delivered product, the Supplier shall provide the applicable certification package as received when required by this clause.

The intent of this requirement is to receive the certification or documentation that normally accompanies the applicable purchased item or service to the Supplier. The Supplier is not required to create additional record, obtain original raw material certifications, or develop a deeper certification chain than what is normally received from its source unless specifically required elsewhere by the Purchase Order, Component Specification, drawing or another applicable Quality Clause.

The Supplier shall provide applicable certifications and objective evidence received from material sources, sub-tier suppliers and external processors that support conformity of the delivered product to Astrolab requirements.

Certifications shall be traceable to the delivered product through applicable part number, serial number, lot, batch, work order, material heat/lot or other suitable means.

Applicable records may include:

- o Raw material or material certifications
- o Heat treatment certifications
- o Plating, anodizing, coating, passivation, or finishing certifications

- o Welding, brazing, bonding, or other joining certifications
- o Nondestructive inspection or test certifications
- o Special process certifications
- o Component or manufacturer certifications
- o Sub-Tier Certificates of Conformance
- o Other supplier or processor certifications applicable to the delivered product

Supplier standard and sub-tier certification formats are acceptable; Astrolab specific certification formats are not required.

Only certifications applicable to the delivered product and necessary to demonstrate conformity to Astrolab requirements are required. The Supplier is not required to provide unrelated purchasing, receiving, or internal supply chain records.

Applicability and Permissibility

Astrolab recognizes that individual certifications may not be routinely available or provide meaningful additional assurance for certain constituent items, including floor stock, standard hardware, commercial components, consumables, catalog items, or other low risk material incorporated through the Suppliers normal controlled processes.

Such records may be excluded from the delivered certification package with Astrolab concurrence when the Supplier can demonstrate that the exclusion does not materially affect product conformity, required traceability, or Astrolab's ability to accept the delivered product.

Where an applicable certification is unavailable, not normally retained or provided, or the Supplier believes the certification does not provide meaningful value based on the product and associated risk, the Supplier shall notify Astrolab and identify the proposed exclusion or alternate evidence.

QC16 | Special Process Control / Nadcap

When a special process is required by the applicable drawing, specification, Component Specification, Purchase Order, or other contractual requirement, the Supplier shall ensure the process is performed by a Nadcap accredited processor for the applicable process and scope, where Nadcap accreditation is available and applicable.

The Supplier shall verify that the processor's accreditation is current and includes the specific process being performed at the time of processing.

Special processes may include, as applicable, heat treating, chemical processing, coatings, welding, brazing, nondestructive testing, composites, electronics, additive manufacturing or other processes for which conformity cannot be fully verified through subsequent inspection or test.

Equivalent / Alternate Process Approval

Where Nadcap accreditation is not available, not reasonably applicable to the process, or the Supplier proposes use of a non-Nadcap source, the Supplier shall notify Astrolab prior to processing and obtain concurrence for the proposed source or controlled method.

Astrolab may accept an alternate processor or equivalent special process control based on objective evidence demonstrating appropriate capability and control.

Supporting evidence may include, as applicable

- o Accreditation to an applicable recognized standard
- o Approval by another aerospace or space customer

- o Process Qualification and validation
- o Personnel Qualification
- o Historical performance
- o Supplier or Astrolab assessment
- o Other technically appropriate evidence demonstrating equivalent process control

Approval of an alternate source does not waive the applicable technical process specification or acceptance requirements.

QC17 | Fracture Critical Inspection

When QC17 is invoked, the Supplier shall contact Astrolab Supplier Development and M&P prior to performing the applicable fracture critical inspection or associated process.

When invoked, product identified as fracture critical shall receive 100% nondestructive inspection of the applicable fracture critical features or product scope in accordance with the drawing, Component Specification, Purchase Order, or other applicable technical requirement.

The NDI method, acceptance criteria, and applicable process specification shall be appropriate to the product, material, geometry, and discontinuities being evaluated.

Applicable NDI methods may include

- o Liquid penetrant
- o Magnetic particle
- o Ultrasonic
- o Radiographic
- o Eddy current
- o Other technically appropriate NDI methods

Inspection shall be performed in accordance with the applicable drawing/specification requirement and recognized industry standard, or Astrolab approved equivalent.

Personnel performing acceptance inspection shall be appropriately trained, qualified, and certified in the applicable method in accordance with NAS 410, ASNT SNT TC 1A, or equivalent recognized qualification program, as applicable to the invoked requirement.

The Supplier shall provide an inspection report or certification that identifies, as applicable, the product inspected, applicable serial/lot identification, inspection method, governing specification, acceptance criteria, inspection results, inspector identification/qualification, and inspection date.

Where the specified NDI method, acceptance criteria, personnel qualification requirement, or inspection extent cannot be met or the Supplier proposes an equivalent or technically superior method, the Supplier shall notify Astrolab and obtain concurrence prior to inspection.

QC18 | Component Specification Compliance and Verification

When QC18 is invoked, the Supplier shall review the applicable Astrolab Component Specification, Purchase Order Quality Clauses and associated referenced requirements and provide a compliance matrix identifying the Supplier's ability to meet the applicable requirements.

The compliance matrix shall be provided sufficiently early to support requirements alignment and updated when applicable requirements or the Supplier compliance position change. Supplier standard or equivalent formats are acceptable.

At a minimum, each applicable requirement shall be classified as

- o Complies: Requirement is fully implemented
- o Partially Complies: Requirement is implemented in part, with documented gaps and proposes actions or controls
- o Does Not Comply: Requirement is not implemented
- o Cannot Comply: Requirement cannot reasonably be implemented due to technical, commercial, regulatory, or business constraints. Justification and any proposed alternate or equivalent controls shall be provided.

For requirements identified as Partially Complies, Does Not Comply, or Cannot Comply, the Supplier shall provide sufficient information for Astrolab to understand the condition, including the applicable gap, rationale, proposed action, alternate/equivalent control, or other proposed path forward.

Identification of a condition within the compliance matrix does not constitute Astrolab approval or acceptance of a deviation from the applicable requirement.

Prior to, or upon delivery, the Supplier shall provide objective evidence demonstrating verification of applicable Component Specification requirements for the delivered configuration. Verification may be tailored to the product, requirement, Supplier manufacturing model, available evidence and risk, and may include inspection/test results, qualification/characterization data, analysis, certifications, FAIR, ATP/ATR, configuration records, manufacturer data, heritage evidence, photographs, CoC, demonstrations or other appropriate evidence.

Existing objective evidence may be used when it sufficiently demonstrates compliance; evidence need not be recreated solely to satisfy QC18.

QC19 | Customer / Government Furnished Material

When Customer Furnished Material (CFM), Government Furnished Material (GFM), or other furnished property is provided for use in fulfillment of the applicable Purchase order or contract, the party providing the material is considered the Provider and the party receiving the material is considered the Recipient for purposes of this clause.

The Provider should communicate applicable handling, storage, preservation, and product protection requirements necessary to maintain the furnished material in an acceptable condition and suitable for its intended use.

Applicable requirements should be provided, as necessary, for

- o Shelf life or expiration control
- o Temperature or environmental control
- o ESD protection
- o FOD prevention
- o Special handling or cleanliness
- o Storage and preservation
- o Packaging
- o Identification and traceability

- o Configuration or revision status, where applicable
- o Other product specific controls

The Recipient shall appropriately identify, protect, and control furnished material while in its possession and shall apply the handling, storage, preservation, and product protection requirements communicated by the Provider. Loss, damage, deterioration, or other conditions affecting furnished material while under the Recipient's control shall be documented and communicated to the Provider when the condition could affect its intended use.