

Quality Notes

The intent of this form is to define the obligatory contractual quality notes for Paragon Space Development Corporation (“Paragon”). A supplier’s acceptance of a purchase order is their agreement and acceptance of the flow down requirements and applicable quality notes identified on the individual purchase order as well as Paragon’s general terms and conditions. To obtain the latest version of Paragon’s purchasing quality notes or general terms and conditions, please visit our website www.paragonsdc.com.

Safety, Quality, and Mission Assurance (SQMA)

Q-101 Paragon Space Development Corp. Quality Acceptance (For Paragon Internal Use Only)

Articles ordered or products reviewed under this Purchase Order Contract must be routed through the Paragon SQMA department and are subject to final quality inspection and acceptance.

Q-102 Documentation Acceptance (Drop Shipment)

Articles ordered under this Purchase Order/Contract are to be drop-shipped to a destination other than a Paragon facility. Final acceptance remains contingent on the submittal and approval of the quality data.

Revision: A

Scope:

This quality note applies to all suppliers performing drop shipments directly to customers, third-party processors, or other designated destinations on behalf of Paragon.

Requirements:

1. Approval and Authorization:

- Suppliers must have prior written approval from Paragon SDC to perform drop shipments
- Drop shipments must comply with the specific shipping instructions and delivery locations provided by Paragon

2. Packaging and Documentation:

- All shipments must include appropriate documentation (packing slip, certificate of conformance, and any required test reports)
- Packaging must protect product integrity, cleanliness, and prevent damage during transit

3. Traceability and Labeling:

- Each item or container must be clearly labeled with part number, revision, lot or serial number (as applicable), and purchase order number
 - Traceability must be maintained from the supplier to the final shipment destination
4. Notification and Confirmation:
- Suppliers must notify Paragon immediately upon shipment, providing tracking information and shipping confirmation
 - Any delays, discrepancies, or exceptions must be reported within 24 hours
5. Quality and Conformance:
- All drop shipped items must meet the same quality and inspection requirements as if shipped to Paragon directly
 - Product found nonconforming at destination may be subject to return, rework, or charge-back to the supplier

Objective Evidence:

Shipment records, certificates of conformance, inspection results, and tracking confirmations shall be retained and made available upon request.

Q-103 100% Inspection Documentation Submittal

The supplier shall perform 100% inspection of all dimensions for each end item to ensure conformance with the applicable drawing and other Purchase Order/Contract requirements. Objective evidence shall be submitted and include:

- Records of actual readings taken during the inspection of each part
- Dimension and tolerance noted traceable back to a sequential numerical annotated drawing/work authorization document (ballooned drawing)
- The calibrated device used to inspect each feature, traceable back to a calibration record in accordance with National Institute of Standards & Technology (NIST)
- Signature/stamp validating/verifying compliance by authorized quality representative

Q-104 Submittal of Inspection / Test Records

The supplier is responsible for performing or having performed all inspection and tests necessary to substantiate that the supplies or services furnished under this Purchase Order/Contract conforms to the Purchase Order/Contract requirements. Records demonstrating compliance with this provision must be created, retained, and delivered. The test report shall show quantitative test results and tolerances for values measured including documentation of the tooling identification number for traceability and shall include information to demonstrate conformance to requirements of the engineering drawing/procurement specification or Purchase Order/Contract.

Actual test reports referencing:

- Purchase Order/Contract Number
- Supplier's name
- Address and/or independent laboratories' name and address
- Part number
- Part name
- Serial number (if applicable)

- Date and run time if applicable

These reports shall be validated by an authorized Supplier's Representative, via an inspection stamp or signature, title, and date.

Q-105 *AS9102 First Article Inspection Requirement – Deliverable Report*

First Article Inspection (FAI) shall be performed and provided by the supplier in accordance with the latest requirements of AS9102. When documenting the FAI, the supplier may use the forms contained within AS9102 or their equivalent if the forms contain all the information required by AS9102.

When a partial or re-accomplished FAI is performed as required by AS9102, supplier will include copy of such FAI report with every shipment.

Examples of Re-Accomplished FAI Requirements (but not limited to):

- Change in process
- Change in equipment
- Change in location
- Change in business ownership
- New revision
- Lapse in production of two (2) years

Q-106 *Certificate of Conformance*

The supplier shall certify that the part(s), assemblies, subassemblies, or detail parts delivered conforms to the Purchase Order/Contract requirements (e.g., manufactured, inspected, and/or tested in accordance with the engineering drawing, or specification) and that supporting documentation is on file. When applicable, the true manufacturers, lot, heat, date code, and/or serial number must appear on the certification.

The Certificate of Conformance shall contain the following:

- Paragon's Purchase Order/Contract Number Date of Shipment
- Part Number
- Name and address of manufacturing or processing location
- Manufacturer's lot, heat, batch, date code, and/or serial number (if applicable)
- Quantity and unit of measurement (each, box, case, gallons, etc.)
- A statement that the materials furnished are in conformance with all applicable requirements
- State that supporting documents are on file and will be made available to Paragon or Government Representatives upon request
- Signature and title of the supplier's representative

An example of an acceptable statement of Certification of Conformance is as follows:

"This is to certify that all items noted are in conformance with the Purchase Order/Contract, drawings, specification and other applicable documentation and that all process certifications, chemical and physical test reports, are on file at this facility and are available for review by Paragon."

When the items on this Purchase Order/Contract are supplied by a distributor, a copy of the manufacturer's certification or the distributor's certification stating compliance and the manufacturer's name and address shall be provided.

Q-107 *Lot Traceability for Commercial off the Shelf (COTS) Items*

The manufacturer's test report(s) (e.g., mill test reports, special processes, Non-Destructive Testing, etc.) shall state a lot of material furnished has been tested, inspected, and found to follow the applicable material specifications. The test report shall list the specifications to which the material has been tested and/or inspected and the identification of the material lot to which it applies.

When the material specification requires quantitative limits for chemical, mechanical, or physical properties, the test report shall contain the actual test and/or inspection values obtained. For certain mill products (except castings, polymers, rubbers, composites, and proprietary materials), certifications for chemistry may indicate, compliance within an allowed range. Certifications for physical properties shall show actual values.

When the vendor supplies an altered material from that which is produced by a raw material manufacturer, the supplier shall submit all pre and post conversion chemical / physical test reports.

Hardware shall be supplied with certifications containing the following items:

- Paragon's Purchase Order/Contract Number
- Lot/Batch Number Traceable to Raw Material Certification
- Part Number
- Raw Material Certifications/Mill Chemical/Physical Test Reports/Statement of Compliance to applicable specifications
- Special Process Certification
- Statement of Approved Distributor (if applicable)

The supplier shall review their sub-tier supplier's certifications for accuracy and compliance with the specification and/or standards.

Q-108 *Raw Material/Physical/Chemical Test Reports*

A physical/chemical test report for raw material shall be submitted to Paragon. The report shall indicate the percentage of each element that makes up the chemical composition and the physical properties of the raw material and a statement of conformance to the applicable specification. It shall contain the following.

- Processing Suppliers name and address
- Name/number of the specification with which the material is complying.
- The melt/heat lot number or other traceable designation (i.e., Purchase Order/Contract, invoice number, etc.)
- Country of Origin/Melt

Q-109 *Nondestructive Test (NDT) Certification*

The supplier shall include with each shipment a certificate for NDT performed and the certification shall contain the following information:

- Processing suppliers name and address
- Paragon's Purchase Order / Contract Number
- Date of Inspection
- Material or item identification/traceability (quantity, part number, heat lot number) of parts tested by part number
- Specification or other requirement defining the NDT acceptance / rejection criteria.
- Authorized representative and NDT certification level
- A copy of the inspector's certification (if applicable)
- Clearly defined inspection results (accept/reject)
- Test Instrument data used in the NDT process traceable back to NIST standards

A record containing the procedures or techniques used and actual results shall remain on file for seven years or more (as required by Purchase Order/Contract). The record must remain on file for seven years or more after shipment to Paragon and shall be furnished to Paragon upon request.

Q-110 *Statement of Work (SOW)*

Articles defined in this Purchase Order/Contract are subject to additional requirements per the defined and delivered SOW, which must be met to achieve compliance with Purchase Order/Contract requirements. Articles will not be accepted by Paragon if supplier fails to comply with the requirements of the SOW. Contact the cognizant Paragon buyer if you do not have a copy of the SOW.

FOR PARAGON USE ONLY: Purchase Order/Contract with this clause shall include the SOW document number input on each line item the SOW applies to.

Q-111 *Paragon/Customer/Government Source Inspection/Mandatory Inspection Points*

Paragon and/or Government source inspection is required. The inspection will take place prior to shipment of the articles from the supplier's facility. Suppliers based in the United States of America shall notify the assigned Paragon Quality Product Assurance Representative a minimum of five (5) working days in advance of the time the articles or materials are ready for inspection or test so the appropriate inspection plan can be coordinated. International Suppliers shall notify Paragon Quality Product Assurance Representative within ten (10) working days in advance of the time the articles or materials are ready for inspection or test so the appropriate inspection plan can be coordinated. The supplier shall make available to the Paragon/Government Quality Representative all applicable drawings, specifications, procedures, SOW, Paragon Purchase Order/Contract, test software, and changes thereto, related to inspection and/or test equipment, and such other information as may be required to satisfactorily perform the inspections and tests required under this Purchase Order/Contract. Paragon acceptance of supplies will not relieve the supplier from responsibility nor impose liability on Paragon for nonconforming supplies.

Q-112 *Certificate of Calibration*

Calibration shall be performed in accordance with ANSI/NCSL Z540.3 or ISO 17025. The supplier shall review all their supplier certifications for accuracy and compliance to the specifications and/or standards. When not specified on the purchase order, calibrated tolerance shall be considered acceptable to manufactures recommendation or industry standard for the device.

Calibration Certifications shall include the following:

- Paragon's Purchase Order/Contract Number
- Paragon Equipment Identification (PEID) number
- Date calibration was performed
- Item serial number
- Model number
- As found/As left data
- Applicable specifications/standard to which the calibration was performed
- Equipment used to calibrate and the calibration due date (as applicable)
-equipment used to calibrate to be traceable back to NIST as required

Q-113 *Chemical Safety Data Sheet (SDS)*

Supplier shall provide a reproducible copy of the SDS with each shipment of any chemical and for all hazardous or regulated materials. All hazardous materials shall be packaged and shipped in accordance with the Code of Federal Regulation (CFR) 49. In the case of certain hazardous or regulated materials the detailed specification shall take precedence over, or in concurrence with, this requirement.

When the physical shipment arrives Shipping/Receiving Department personnel shall notify the Hazardous Communication Technician to be inspected before releasing to inventory.

Q-114 *Software Quality Assurance*

The supplier shall plan, develop, and implement a Software Quality Assurance (SQA) program which includes documented practices and procedures to assure compliance with all software requirements of this Purchase Order/Contract. The supplier shall identify organizational responsibilities and authorities for the execution of the program and the event critical to the program's implementation.

The supplier shall provide Paragon with access to supplier facilities to review all software products and activities required to determine compliance with Purchase Order/Contract. Paragon's review shall not replace supplier's own evaluation or otherwise relieve the supplier of the responsibility to furnish acceptable software and associated documentation.

Q-115 *Acquisition of Measuring and Monitoring Devices (For Paragon Internal Use Only)*

Articles or products ordered under this Purchase Order Contract must be routed through the Paragon SQMA department upon receipt and are subject to final quality inspection and acceptance. Devices purchased with this clause are to have a PEID asset number issued and tracked through the calibration and preventative maintenance system.

Q-116 *Packing Requirements for Metal Tubes*

This quality note applies to all metal tubes delivered to Paragon, including stainless steel, aluminum, titanium, or other alloyed materials, regardless of diameter, wall thickness, or length.

Packing Requirements:

1. Protection from Mechanical Damage:
 - Tubes must be packed to prevent bending, denting, scoring, or end damage
 - Use spacers, end caps, separators, or individual wrapping as appropriate
2. Corrosion Prevention:
 - Tubes must be clean, dry, and free of contaminants prior to packing
 - Use corrosion-inhibiting paper, poly sheeting, or VCI (volatile corrosion inhibitor) bags where applicable
 - Avoid use of materials that trap moisture or off-gas corrosive substances (e.g., acidic cardboard)
3. Tube Segregation:
 - Dissimilar metals must be packaged separately to prevent galvanic corrosion
 - Different heat lots or sizes must be clearly segregated and identified
4. Orientation and Support:
 - Long tubes must be packed with support along their entire length to prevent sagging
 - If shipped in crates or bundles, tubes must be strapped securely to prevent movement
5. Identification and Traceability:
 - Each package must be clearly labeled with part number, material type, heat/lot number, quantity, and PO number
 - If multiple lengths or cuts are included, provide an itemized packing list
6. Export/Long-Distance Shipping:
 - For international or long-haul transit, additional protection against vibration and environmental exposure is required
 - Use sealed, moisture-resistant containers with desiccant as needed
7. Photographic Documentation
 - Prior to final packaging closure, suppliers must take clear photographs documenting the condition and protection of the tubes
 - Photos must show the end caps, spacers, corrosion protection, and any packaging supports used

Objective Evidence:

Suppliers shall retain records of packing configuration, labeling, and any special protective measures used, and provide upon request. Nonconformance due to damage in transit may be subject to rejection and supplier chargeback.

Manufacturing

Q-201 *Age Control/Shelf Life*

Each individual container must be marked with the materials useful shelf life, the date of manufacture, and the date of expiration. A minimum of 75% of the products shelf life must be remaining upon receipt to Paragon. The supplier shall review their supplier certifications for accuracy and compliance to the specification and/or standards.

Certification must include but not limited to:

- Paragon's Purchase Order/Contract Number
- Lot/Batch Number
- Part Number
- Manufacture's name
- Applicable specifications and standards
- Clearly defined date of manufacture/expiration

Q-202 *Limited Operating Life Items*

Supplier shall collect and maintain records of operating time or cycles for all items designated as Limited Operating Life items by Customer's drawings or specifications. Records will include the total elapsed time or cycle for each operation, cumulative time or cycles starting with the first functional test, and remaining time or cycles.

Q-203 *Additive Manufacturing (AM) Control*

Seller and seller's sub-tier suppliers shall maintain documented information for the manufacture and Additive Manufacturing (AM) feed stock, product, and/or post-processing methods. Documented information shall include all inspection and testing methods as well as results. The substitution of one AM process for another AM process is prohibited without prior Paragon written approval. The substitution of AM for traditional manufacturing techniques is prohibited. The substitution of traditional manufacturing techniques for AM is likewise prohibited.

Feedstock Requirements:

- Feedstock lots shall not be combined or commingled on a single AM build without prior Paragon approval for the specific part. Where feedstock lots are combined, the combined lot shall be identified with its own lot number that is traceable to individual feedstock lots
- Recycle or reuse of feedstock is prohibited without prior Paragon approval. If approved, recycle or reuse shall be documented within the manufacturing record
- Feedstock shall be stored in environmentally controlled locations and in accordance with all conditions specified by the feedstock supplier
- Feedstock shall be suitable controlled throughout the manufacturing process to ensure traceability to the manufacturer's original Certificate of Analysis

Q-204 *Manned Space Flight Requirements*

Articles ordered under this Purchase Order/Contract are for use in Manned Space Flight. Materials, manufacturing, and workmanship of the highest quality standards are essential to astronaut safety. If able, supply the desired items of a quality which is higher than that of the items specified or proposed, suppliers are requested to bring this fact to the immediate attention of the purchasing agent. This clause will be inserted in all subcontracts and purchase orders for such items down to the lowest tier.

Q-205 *Prohibition of High Energy Machining*

This quality note applies to all suppliers, subcontractors, and internal manufacturing operations providing parts, components, or assemblies to [Company Name]. It encompasses all materials and configurations unless otherwise specified by engineering documentation.

Requirements:

1. Prohibition of EDM and Laser Machining:

- The use of Electrical Discharge Machining (EDM) or Laser Machining (LM) is strictly prohibited for any manufacturing operation, feature creation, or rework activity unless explicitly authorized in writing by Paragon

2. Rationale for Prohibition:

- EDM and LM processes can introduce undesirable thermal effects, such as recast layers, microcracks, metallurgical degradation, and surface anomalies
- These effects can compromise the structural integrity, fatigue resistance, or functional performance of the product

3. Notification and Approval Requirements:

- Suppliers must submit a formal request and receive written approval from Paragon SDC prior to performing any EDM or LM operations
- Approval must include identification of parts, processes, and justifications, and may be conditional upon additional inspection or qualification steps

4. Consequences of Non-Compliance:

- Use of EDM or LM without prior approval constitutes a nonconformance and may result in part rejection, return, rework, or charge-back
- Repeated violations may impact supplier performance ratings and sourcing status

5. Documentation and Traceability:

- If EDM or LM is approved, all affected parts must be identified and traceable
- Documentation must include process parameters, inspection results, and any metallurgical evaluations conducted

Objective Evidence:

Suppliers shall retain all documentation related to EDM/LM process approvals, traceability, and inspections. These records must be provided upon request. Compliance to this note is subject to audit.

Q-206 High Energy Manufacturing

This quality note applies to all parts or features produced using Electrical Discharge Machining (EDM) or Laser Machining (LM) processes, whether internal or outsourced to suppliers.

Requirements:

1. General Process Control:

- EDM and LM processes must be controlled using documented procedures that include equipment setup, process parameters, and inspection criteria
 - Only qualified personnel shall operate EDM and LM equipment

2. Thermal Effects and Surface Integrity:

- Parts must be free from thermal damage, recast layers, micro-cracks, or metallurgical degradation resulting from EDM or LM processes
- If required by drawing or specification, parts must be inspected for surface integrity using microstructure evaluation or non-destructive methods

3. Post-Process Requirements:

- All EDM or LM-processed surfaces shall be cleaned to remove debris, oxides, or residue prior to subsequent processing
- Deburring and post-machining may be required to ensure conformance to dimensional and surface finish requirements

4. Inspection and Validation:

- All features produced by EDM or LM shall be inspected for dimensional conformance and location tolerance
- Visual inspection must verify freedom from arcing, excessive heat marks, or other surface defects

5. Notification and Approval:

- Suppliers must notify Paragon SDC if EDM or LM is used on any part not explicitly approved or defined in the engineering documentation
- Prior approval is required for any deviation from standard EDM or LM practices

Objective Evidence:

Process records, operator qualifications, inspection reports, and any metallurgical evaluations related to EDM or LM shall be retained and made available upon request.

Materials and Process

Q-301 *Special Process Certification*

Special Process: A method controlled by a contractually required specification in which the product undergoes a physical, chemical, or metallurgical transformation. Conformance to the specification cannot be readily verified by normal inspection methods.

Examples of special processes include (but not limited to): heat treat, coatings, chemical conversion coatings, anodizing, passivation, welding, soldering, brazing, dye penetrant, etc.

A special process certification of conformance shall be provided with each shipment of item(s) delivered on this purchase order/contract.

Coating shall be graded as > 9 in accordance with ASTM D1654, Standard Test method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments, and not exhibit blistering, film failure, cracking, or substrate corrosion after exposure.

Special Process Certifications may be in supplier format and shall include the following:

- Paragon's Purchase Order/Contract Number
- Part Number(s)/Revision
- Quantity
- Date of processing
- Serial and/or lot Numbers, of the hardware processed (if applicable, internal job number acceptable)
- Material process specification & revision
- A certification stating the special process was performed per the applicable drawing/specification requirements
- Where applicable vendor shall provide coating/plating thickness/grade per ASTM D1654
- Processing Suppliers name and address(es) including any sub-tier suppliers
- Certification must be signed and dated by the supplier's authorized representative and/or the processor attesting to the acceptance of the processes performed to the required specification(s)

Q-302 *Specialty Metals*

Certification must state the materials supplied meet the requirements of [Defense FAR Supplement \(DFARS\) 252-225-7014](#).

Specialty metals means "(i) Steel— (A) Where the maximum alloy content exceeds one or more of the following limits: manganese, 1.65 percent; silicon, 0.60 percent; or copper, 0.60 percent; or (B) That contains more than 0.25 percent of any of the following elements: aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, or vanadium; (ii) Metal alloys consisting of nickel, iron-nickel, and cobalt base alloys containing a total of other alloying metals (except iron) in excess of 10 percent; (iii) Titanium and titanium alloys; or (iv) Zirconium and zirconium base alloys. The Contractor agrees that any specialty metals incorporated in articles delivered under this contract will be melted in the United States, its possessions, or Puerto Rico.

Q-303 *Restriction of Hazardous Substances (RoHS) Compliant*

A material declaration shall be provided, stating that materials delivered against this order are RoHS Compliant (may be included on the Certificate of Conformance). RoHS restricted materials include lead, mercury, cadmium, hexavalent, chromium, polybrominated diphenyl's (PBB), or polybrominated diphenyl ethers (PBDE).

The RoHS shall include, at a minimum the following:

- Paragon's Purchase Order Number
- Part Number
- Part Revision
- Serial Number (if applicable)
- Lot/Batch Number (if applicable)

Q-304 *100% Dimensional Inspection of Threads*

To ensure all internal and external threaded features meet specified dimensional, form, and fit characteristics in accordance with engineering, drawing, and applicable thread standards.

This requirement applies to all threaded features (internal and external) produced on hardware including tapped holes, rolled threads, cut threads, formed threads, inserts, studs, pins, and modified COTS threaded components.

This requirement applies to all threaded features (internal and external) produced on hardware including tapped holes, rolled threads, cut threads, formed threads, inserts, studs, pins, and modified COTS threaded components.

Requirements:

1. 100% dimensional inspection shall be performed on all threaded features using calibrated, approved inspection devices appropriate to thread class, pitch, form, and tolerance.
2. Inspection shall include verification of: major, minor, and pitch diameters; thread form, lead, and angle; thread depth or engagement; and class of fit per drawing or specification.
3. Conformance shall be verified using GO and NO-GO gaging, thread plug or ring gages, air gaging, optical inspection, or CMM as applicable and traceable.
4. When using GO/NO-GO gauges: GO gauge must fully engage to the specified depth or full length, and NO-GO gauge must not engage beyond 3 full turns unless otherwise defined by specification.
5. For UNJ, MJ, miniature, or specialty thread forms, inspection shall comply with drawing callouts, NAS/SAE specifications, or OEM requirements.
6. Surface condition, burrs, nicks, plating, coatings, and thread damage (galling, tearing, collapse) shall be evaluated. Threads must be free-spinning and visually uniform.

Documentation:

1. Supplier shall record all inspection results in lot-level inspection records identifying part number, revision, serial/lot number, thread designation, gage ID/date, and accept/reject status.
2. Thread gage calibration records must be available upon request.
3. Nonconforming results require immediate containment, documented NCR, and notification prior to shipment.

Acceptance Criteria:

1. No damage, burrs, plating buildup, contamination, or material deformation.
2. Thread engagement must meet drawing depth and class of fit.
3. Nonconforming threads must be dispositioned in accordance with MRB authority. Unauthorized repair (e.g., chasing, re-tapping) is prohibited unless approved in writing.

Applicable Standards (Examples):

1. ASME B1.x Series (per applicable thread form).
2. SAE/NAS/AS Thread Specifications.
3. ISO Metric Thread Standards.
4. Drawing, Model, Purchase Order (PO), and Statement of Work (SOW) Requirements.

Deliverables:

1. Inspection report with recorded thread verification results.
2. Gage certification available upon request.

Notes:

1. Coated or plated thread dimensions must be inspected after finish unless otherwise approved.
2. Use of thread inserts must follow OEM or NAS / MS installation requirement.

Q-305 Critical Process Control

All Critical Processes used in the manufacture, inspection, testing, processing, and handling of deliverable hardware shall be controlled to ensure product conformity and compliance with contractual, engineering, regulatory, and quality management system requirements.

1. Definition. A Critical Process is any manufacturing, inspection, or support process that:

- Directly affects fit, form, function, safety, reliability, or performance of the product;
- Cannot be fully verified by subsequent inspection or test;
- Requires validated methods, qualified personnel, or controlled parameters to ensure conformity

2. Applicability. This requirement applies to all internal operations and all subcontracted/supplier processes identified as critical, including but not limited to:

- CNC Machining
- Heat Treatment
- Welding and Brazing
- Surface Treatments and Coatings
- Special Cleaning Processes
- Nondestructive Testing (NDT)
- Precision Measurement and CMM Inspection
- Software-Controlled Manufacturing Operations
- Deburring and Edge Break Operations on Critical Features
- Assembly Operations affecting safety or functionality

3. Requirements. The supplier shall:

- Maintain documented procedures, work instructions, specifications, and acceptance criteria for all critical processes
- Ensure personnel performing critical processes are trained, qualified, and authorized.
- Use calibrated and verified equipment appropriate for the process
- Validate and monitor process parameters where required to ensure repeatability and conformity

- Maintain traceability of materials, tooling, inspection records, certifications, and process data associated with critical processes
- Flow down all applicable critical process requirements to sub-tier suppliers
- Notify the purchaser prior to any changes to:
 - Critical process methods,
 - Process sequence,
 - Equipment,
 - Software,
 - Key personnel,
 - Sub-tier suppliers performing critical processes
- Retain objective evidence of process control, inspection, validation, and acceptance records in accordance with contractual and QMS retention requirements

4. Nonconformance. Any deviation associated with a critical process shall be documented and submitted for Material Review Board (MRB) or customer disposition when required. Product produced using unapproved or uncontrolled critical processes may be subject to rejection.

5. Verification. The organization reserves the right to:

- Perform surveillance or audits of critical processes,
- Review supporting process records and certifications,
- Witness processing or inspections at supplier facilities,
- Verify compliance to applicable specifications and standards

6. Reference Standards. Critical processes shall be performed in accordance with applicable requirements including, as applicable:

- AS9100
- Customer Engineering Specifications
- Industry Specifications (AWS, NADCAP, ASTM, AMS, MIL Specifications, Work Authorization Document, etc.)
- Approved Manufacturing Planning and Traveler

Q-306 *Welding and Brazing*

All welding and brazing operations performed in support of this purchase order shall comply with the following requirements unless otherwise specified by drawing, specification, or contractual flowdown requirements.

1. Approved Procedures

Welding and brazing shall be performed only in accordance with documented and approved procedures. Weld Procedure Specification (WPS) shall be approved by Paragon and shall include process parameters, filler materials, joint preparation, cleaning methods, inspection requirements, and acceptance criteria.

2. Personnel Qualification

All welding and brazing personnel shall be qualified and certified to the applicable industry or customer-required standard prior to performing work. Qualification records shall be maintained and made available upon request. Examples of applicable standards include:

- AWS D17.1
- AWS B2.1
- ASME Section IX
- Customer-approved specifications

3. Material Control and Traceability

Base materials, filler metals, fluxes, shielding gases, and consumables shall be controlled to prevent contamination, deterioration, or use of expired material. Material traceability shall be maintained from receipt through final acceptance unless otherwise authorized.

4. Cleanliness Requirements

Surfaces to be welded or brazed shall be free from oil, grease, oxidation, paint, dirt, moisture, or foreign material that could adversely affect joint integrity or process quality.

5. Special Process Control

Welding and brazing are considered special processes. The supplier shall ensure:

- Process controls are documented and implemented
- Equipment is maintained and calibrated as required
- Process parameters are monitored and controlled
- Changes to the WPS shall be approved by a Paragon Subject Matter Expert (SME) prior to implementation

6. Inspection and Acceptance

Welded and brazed joints shall be inspected in accordance with drawing, specification, and contractual requirements. Inspection methods may include:

- Visual inspection
- Dimensional verification
- Liquid penetrant inspection
- Radiographic inspection
- Leak testing
- Metallurgical evaluation

Acceptance criteria shall comply with the applicable engineering requirements and governing specifications.

1. Repair and Rework

Weld or braze repair/rework shall not be performed without documented approval by Paragon when prohibited by drawing, specification, or customer requirement. Approved repair activities shall be performed using qualified procedures and personnel.

2. Records Retention

The supplier shall maintain records of:

- Procedure qualifications
- Personnel certifications
- Inspection results
- Heat lot traceability, when applicable
- Repair/rework documentation

Records shall be retained in accordance with contractual and quality management system requirements.

1. Notification of Nonconformance

The supplier shall notify the purchaser of any welding or brazing nonconformance that may affect fit, form, function, reliability, or compliance to requirements prior to shipment.

2. Flowdown Requirements

The supplier shall flow down all applicable welding and brazing requirements to sub-tier suppliers performing special process operations associated with this purchase order.

Electrical

Q-401 *Electronic and Electrical Equipment (EEE) Parts Procurements*

All parts listed in MIL-STD-975 (NASA) and/or the Purchase Order/Contract SOW shall be procured from manufacturers/suppliers/distributors listed in the applicable Qualified Products List for the procured part(s). EEE parts shall be tested and handled in accordance with the Purchase Order/Contract SOW. Pre-Acceptance testing of EEE parts shall be accomplished by a Paragon approved, independent testing laboratory in accordance with the associated part(s) specification and MIL-STD-975 (NASA). All test results/reports shall accompany standard EEE parts shipped to Paragon.

All EEE parts procured from the supplier, or its sub-tier supply base shall have been manufactured within three (3) years from the delivery date for Plastic Encapsulated Microcircuits (PEMs) and five (5) years for all others. This shall include all sub-assemblies of the article being procured.

Q-402 *Electrostatic Discharge (ESD) protection Program and Packaging*

The supplier shall document and implement an ESD Control Program in accordance with ANSI/ESD S20.20, ESD Association Standard for the Development of an ESD Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically initiated Explosive Devices).

Parts must be properly packaged and identified as required in ANSI/ESD S20.20. All goods will be placed in conductive or static-dissipative packages, tubes, carriers, conductive bags, etc., for shipment. The packaging must be clearly labeled to indicate that it contains electrostatic sensitive goods. Electrical parts that may be used or shipped in conjunction with ESD sensitive parts shall be treated as ESD sensitive.

Q-403 *Aerospace and High Performance (AHP) Electronic Systems Containing Lead-Free Solder*

This clause identifies the requirement of applications on high performance electronic systems. The supplier shall execute the terms of this Purchase Order/Contract in compliance to GEIA-STD-0005-2 (Standard for Mitigating the Effects of Tin Whiskers in Aerospace and High-Performance Electronic Systems).

Q-404 *Counterfeit Risk Mitigation for Electronic Components*

This Quality Note applies to all electronic components (including discrete semiconductors, integrated circuits, passive devices, electromechanical parts, and sub-assemblies) supplied under this purchase order, whether delivered as individual line items or incorporated into higher-level assemblies and regardless of tier within the supply chain.

Requirements:

The supplier shall establish and maintain a counterfeit parts control plan in accordance with SAE AS5553 or equivalent, with the objective of preventing the delivery of counterfeit, suspect counterfeit, or unauthorized components.

Authorized Sources Only:

- All electronic components must be procured directly from the Original Component Manufacturer (OCM), Original Equipment Manufacturer (OEM), or their

authorized/franchised distributors. Use of independent distributors or brokers is prohibited without prior written approval from the Buyer

Certificate of Conformance:

- Supplier shall provide a Certificate of Conformance (C of C) with each shipment certifying that the parts are genuine, new, and unaltered, and that they were sourced from authorized supply channels. The C of C shall include the part number, lot/date code, manufacturer name, and quantity shipped

Traceability:

- Supplier shall retain documentation that provides full traceability to the OCM or authorized source. Records must be available for review upon request and retained for a minimum of 7 years

Packaging Integrity:

- All parts shall be shipped in original, sealed manufacturer packaging when possible. Repackaged components must be clearly labeled and handled in accordance with ESD and moisture sensitivity requirements

Suspect Counterfeit Handling:

- If any component is found to be counterfeit or suspect counterfeit, it shall be quarantined, reported to the Buyer within 24 hours, and withheld from further use. The Buyer reserves the right to notify GIDEP and applicable authorities

Right of Access:

- The Buyer and its customers reserve the right to perform surveillance or audits of the supplier's counterfeit parts prevention program and relevant procurement records

Q-405 *Red Plague Prevention and Detection*

This quality note applies to all components, assemblies, and subassemblies that contain silver-plated copper conductors, shields, or braided wires.

Requirements:

1. Material Handling, Storage and Shipping:

- Silver-plated copper materials must be stored in clean, dry, non-corrosive environments
- Humidity must be controlled to remain below 50% RH where feasible
- Stored and shipped in a sealed water-vapor-proof packaging (i.e.- Moisture Barrier Bag, dry pack, etc.), with capped ends, activated desiccant, and an irreversible humidity indicator card (1-HIC). Wire and cable shall not be stored in paper wrapping materials or cardboard boxes
- Packaging. MIL-STD-2073-1 E Method 51. Moisture Barrier Bags (MBB) shall meet MIL-PRF81705, TYPE 1
- Capping. Wire and cable ends shall be capped with heat shrinkable end-caps conforming to SAE-AMS-DTL-23053/4, or dipped in insulating electrical varnish for a length of approximately 2.5 cm (1 in)

- Desiccant (Activated). MIL-D-3464 Type 2. The minimum quantity of desiccant to be based on the protective package's interior exposed surface area, in accordance with MIL-STD-2073-1E, Method 50, Formula 1
 - Irreversible Humidity Indicator Card (1-HIC). Irreversible Indication (50-60-70-80-90% RH), or a combination Irreversible / Reversible Humidity Indicator (50-60-70-80-90% RH) conforming to MIL-1-8835
2. Process Controls:
- Silver plating processes shall be tightly controlled to ensure proper adhesion and plating thickness (minimum 40 microinches unless otherwise specified)
 - Avoid exposure to sulfur-bearing compounds, high humidity, or temperatures that could accelerate corrosion
3. Inspection and Testing:
- Visual inspection for signs of red-colored corrosion (Red Plague) is required at incoming, in-process, and final inspection stages
 - Any evidence of red-colored corrosion shall be cause for rejection
4. Corrective Action:
- If Red Plague is detected, the supplier must notify Paragon SDC Quality within 24 hours
 - A full root cause analysis and corrective action plan must be submitted within 5 business days
5. Prevention:
- Use of conformal coatings, sealing, or hermetic packaging to mitigate environmental exposure is encouraged when applicable
 - Avoid crimping or bending of silver-plated wires that may crack plating and accelerate corrosion

Objective Evidence:

Records of silver-plating process parameters, storage conditions, and inspection results shall be retained and made available upon request.

Q-406 Prohibition of Pure Tin

This Quality Note establishes requirements to prevent the use of pure tin finishes on materials, components, and hardware supplied under this purchase order due to the risk of tin whisker formation, which can result in electrical shorts, system failures, and reduced reliability in aerospace and high-reliability applications.

This requirement applies to all electrical, electronic, electromechanical, and hardware items delivered under this purchase order, including Commercial Off-The-Shelf (COTS) components unless otherwise authorized in writing.

Requirements:

1. Pure tin plating or finishes containing greater than 97% tin by weight are prohibited.
2. Tin finishes shall contain a minimum of 3% lead (SnPb) or utilize an approved alternative finish demonstrated to mitigate tin whisker growth.

3. Acceptable alternative finishes may include, but are not limited to:
 - Tin-lead (SnPb)
 - Nickel-palladium-gold (NiPdAu)
 - Gold
 - Silver
 - Other finishes approved in writing by the Buyer
4. The Supplier shall implement controls to prevent the use of prohibited pure tin finishes within their supply chain.
5. The Supplier shall maintain objective evidence demonstrating compliance with this requirement, including:
 - Material certifications
 - Manufacturer specifications
 - Plating certifications
 - Test reports or declarations of conformity
6. If pure tin is identified in any supplied material or component, the Supplier shall notify the Buyer immediately and prior to shipment.
7. Any deviation from this requirement requires formal written approval from the Buyer's Quality organization prior to implementation or shipment.

Flowdown Requirements:

The Supplier shall flow down this requirement to all sub-tier suppliers providing applicable materials, components, or processes associated with this purchase order.

Verification:

Compliance to this requirement shall be verified by one or more of the following methods, as applicable:

- Review of manufacturer or supplier material and plating certifications
- Review of product datasheets and finish specifications
- Certificate of Conformance verification
- Supplier declaration of finish composition
- Independent laboratory analysis, including X-Ray Fluorescence (XRF) testing or equivalent analytical methods

Objective Evidence:

Records of silver-plating process parameters, storage conditions, and inspection results shall be retained and made available upon request.

Purchasing

Q-501 *Quality Management System (QMS)*

The supplier shall establish, document, and maintain a QMS that complies with the latest version requirements of ISO9001 or AS9100, and is certified by a recognized certified accreditation body, or a QMS approved by Paragon.

Q-502 *Sub-Tier Suppliers AS9100/ISO9001/AS9120/NADCAP*

The supplier shall not subcontract work on any article to be supplied under the Paragon Purchase Order/Contract unless the supplier's company is of a 3rd party certification which is nationally or globally recognized such as AS9100/ISO9001/AS9120/NADCAP certified or without prior written approval from Paragon. A vendor must be certified for each special and/or controlled process it performs.

Q-503 *Buy American*

Materials procured under this Purchase Order/Contract are subject to the requirements of the [Buy American Act FAR 52.225](#).

Q-504 *Defense Priorities and Allocation System (DPAS) Regulations*

This is a rated Subcontract certified for national defense and the Subcontractor shall follow all the requirements of the Defense Priorities and Allocation System (DPAS) regulations (15 CFR 700). Written acceptance or rejection of DX rated orders must be received in ten (10) working days and fifteen (15) working days for DO rated orders. Orders which have PQ-504 applied must include the specific priority rating, if not present on the order, contact buyer directly.

Q-505 *Record Retention*

Supplier shall maintain documented evidence of product quality throughout the manufacturing process, allowing for analysis and corrective action if needed, while also complying with industry regulations and customer requirements. The specified clause below shall determine the period of retention required.

- a - 5 Years
- b - 7 Years
- c - 10 Years
- d - 15 Years
- e - 20 Years

Specific records may include:

- Inspection reports.
 - Test results.
 - Calibration record.
 - Non-conformance reports.
 - Corrective action records.
 - Manufacturing process data.
- Material traceability records.