

QUAL-REFN-002
SNC Supplier Quality Assurance Requirements

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1 PURPOSE

The Sierra Nevada Corporation (SNC) Supplier Quality Assurance Requirements (SQAR) document is a reference document that further explains what the assigned Quality Codes require of Suppliers and forms part of the SNC Purchase Order. The SQAR's purpose is to support ensuring SNC's Quality Requirements are consistently understood and met by Suppliers.

2 SCOPE

The scope of the requirements outlined in this document applies to all four SNC Business Areas (BAs) and are reflective of the SNC Quality Assurance (QA) Codes that are flowed down to SNC's Suppliers via SNC Purchase Orders. The requirements apply to materials and services that are procured to support SNC's contract deliverables to customers.

3 INSTRUCTIONS FOR SUPPLIER USE

1. **General:** This document is divided into four sections, as described below, with category headings containing the SNC Quality Assurance (QA) Code numbers, the QA Code Title, the corresponding QA Code Description, and an explanation of the Action Required and/or the Required Deliverable from Suppliers to SNC to fully satisfy the requirements of the Quality Assurance (QA) codes that are included on SNC Purchase Orders and/or Change Orders.
 - a. Section 4.0: General Quality Flow Down Requirements Applicable to All SNC BAs that may be included on all Purchase Orders and/or Change Orders.
 - b. Section 5.0: All SNC BAs Quality Flow Down Requirements by Process Type. This section breaks down the SNC QA codes for purchases made by SNC for:
 1. Calibration Services
 2. Circuit Card Assembly / Printed Circuit Boards
 3. Raw and/or Composite Material Manufacturing
 4. Electronic Component / Electronic Assembly Manufacturing / Wire and Cable Harness
 5. Epoxy, Adhesive, Elastomeric Material, and Rubber Manufacturing
 6. Hardware Manufacturing – Build to Print and Commercially Available Off the Shelf (COTS)
 7. Metal Fabrication and Machined Parts
 8. Painting, Chemical Manufacturing, Coatings
 9. Special Processes
 - c. Section 6.0: Aviation / Aircraft Parts and Services Supplier Quality Flow Down Requirements
 - d. Section 7.0: Space Systems Parts and Services Supplier Quality Flow Down Requirements
2. **Supplier Review and Acceptance of Quality Codes on SNC POs:**
 - a. Suppliers are required to review the Purchase Order(s) and associated QA Codes by PO line item on the PO, reference this document upon PO receipt to clarify requirements and deliverables, and contact SNC if the QA Codes are not understood prior to acknowledgement of the PO. Notify SNC, in advance of PO acknowledgement, if Supplier is unable to meet all QA Code requirements on the PO.
 - b. Suppliers are required to provide confirmation to SNC with the acknowledgement of the PO indicating that Supplier has the capability to perform the work that is being ordered and that Supplier commits to meeting all of the requirements of all QA Codes on the PO at the time of delivery to SNC.

4 GENERAL QUALITY FLOW DOWN REQUIREMENTS APPLICABLE TO ALL SNC BAs

This section contains General Quality Requirements that may be applied to POs from all SNC BAs and are independent of Supplier Manufacturing Process and/or Service type.

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA002A	Certificate of Conformance (or equivalent)	The Supplier shall submit with each shipment a Certification of Conformance, signed (this may be an electronic signature) by an authorized supplier's representative indicating the representative's job title. The Certification of Conformance shall provide the Purchase Order Number, Applicable drawing (s) and/or specifications, including revision levels, amount of material or quantity of items in the shipment Manufactures Name, Lot, Batch and Serial Number (s) as applicable.	SNC requires a stand-alone Certificate of Conformance signed (manually or electronically) by a member of Supplier's management that is accountable for all items meeting SNC's requirements indicating that all items in the shipment meet SNC's requirements. The signed Certificated of Conformance must list the following items for each item shipped to SNC: Supplier Representative's job title, SNC's Purchase Order Number, Application drawing(s) and/or specification(s) with revisions clearly identified, Supplier and/or Manufacturer Name, Lot, Batch, and/or Serial Number(s).
QA002B	Certificate of Conformance (or equivalent) for Traceability to Origin	The supplier must deliver with the shipment, a copy of the original manufacturer's material certificate of conformance for the material used to produce the product, which identifies traceability to origin.	SNC requires a stand-alone Proprietary Certificate of Conformance from the original manufacturer of the material used to produce the product for each line item shipped, including objective evidence to demonstrate full traceability to the origin of the material.
QA002D	Certificate of Conformance (or equivalent)	The supplier shall provide with each shipment a Certificate of Conformance that states all parts that store or transmit data have an unbroken chain of custody back to the original manufacturer and shall be compliant with the requirements of the Trade Agreements Act of 1979 (19 U.S.C. 2501).	SNC requires a stand-alone Certificate of Conformance certifying compliance with Trade Agreements Act 19 USC 2501 for each line item shipped to certify that all parts that store or transmit data have an unbroken chain of custody back to the original manufacturer
QA002E	Certificate of Conformance (or equivalent)	Suppliers shall submit with each shipment a Certificate of Conformance assuring that all work performed in connection with the Purchase Order conforms to the requirements therein. The C of C may be a separate document having relevant information regarding the parts being certified, such as purchase order, part number, revision, serial number (if applicable) or it may contain reference to a package of documents that makes it traceable to the Purchase Order and it's manufacture. It shall have the Supplier Name, printed/ typed name of the supplier's authorized representative certifying the shipment, their title, signature (electronic is acceptable) or stamp, and date. Examples of traceable information may include, but are not limited to: • Date of Manufacture	SNC requires a stand-alone Certificate of Conformance by a member of Supplier's management that is accountable for all items meeting SNC's requirements indicating that all items in the shipment meet SNC's requirements. The signed Certificate of Conformance must list the following items for each item shipped to SNC: Supplier Name, Printed name and title of the Supplier's Representative signing that the shipment meets requirements, date of shipment authorization and signature, date of manufacture, serial / lot / batch number, control number, work order number, and all test parameters / pass fail criteria / test results.

		<ul style="list-style-type: none"> • Serial, Lot or Batch Number • Control Number • Work Order Number • Test Data with associated identifying information 	
QA002F	Packing Slip (or equivalent) Documentation	A packing slip that lists the purchase order number, part number plus manufacturer's name or cage code is required with this order.	SNC requires a packing slip to be affixed to the outside of the shipping container, as well as a copy of the packing slip included internal to the container. The packing slip is required to list the SNC Purchase Order Number, Part Number(s) being shipped, and the Supplier / Manufacturer's name and cage code.
QA004	First Article Inspection (General)	First Article inspection shall include actual findings of all drawing dimensions, notes and results of nondestructive tests required by the drawing and/or requirements of the Purchase Order. This will be conducted at the Manufacturer's facility. A copy of the report shall be delivered with the first delivery of the procured item.	SNC requires that Suppliers complete and submit to SNC with shipment a full first article inspection (FAI) using Supplier's own form for the identified parts on the SNC Purchase Order to identify and indicate that all requirements have been met.
QA004A	First Article Inspection (AS9102)	First Article Inspection required. Suppliers must use AS9102 Forms 1, 2 and 3 found at: http://www.sae.org/aag/publications/as9102a-faq.htm	SNC requires that Suppliers complete and submit to SNC with shipment a full first article inspection (FAI) for the identified parts on the SNC Purchase Order to identify and indicate that all requirements have been met in accordance with and using the AS9102 forms 1, 2, and 3.
QA005	Final Acceptance	Final acceptance of all items furnished on this Purchase Order shall be at SNC. Inspection at source by SNC or their customer shall not constitute final acceptance, nor shall it relieve the Supplier of their responsibility of furnishing acceptable products and/or services.	SNC requires that Suppliers submit 100% conforming items to the requirements of the PO satisfy all SNC Purchase Order terms. SNC holds and maintains the final acceptance authority for the delivered items
QA006	SNC / Customer-Furnished Material	For all SNC / Customer Furnished Material, Suppliers shall: <ol style="list-style-type: none"> 1. Inspect upon receipt all materials or parts furnished by SNC and provide written notification to SNC of any discrepancies found during inspection. Segregate and withhold from use all materials and parts found to be discrepant pending written disposition by SNC. 2. Document on a Certificate of Conformance that SNC / Customer Furnished material was used in the manufacture of the delivered items. 3. Provide a record of traceability in the packing slip that includes the SNC / Customer Furnished material Lot Number, Shipper Number, actual measurements of drawing dimensions made during product final acceptance, and/or Serial Number(s) for each line item on the Purchase Order. 	SNC requires Suppliers to inspect all SNC / Customer Furnished Material and notify SNC of any discrepancies in a timely manner following inspection, as well as segregate the discrepant items, not using them to satisfy the terms of the Purchase Order. SNC also requires that Suppliers document and provide full traceability on a Certificate of Conformance submitted to SNC for SNC / Customer Furnished Material with SNC / Customer Furnished Material Lot Number, Shipper Number, Actual Measurements of Drawing Dimensions made during product final acceptance, and/or Serial Number(s) for each line item on the Purchase Order.
QA009	SNC Source Inspection at Supplier	Source inspection of items furnished on this Purchase Order is mandatory. Supplier shall notify SNC Quality Organization at least seven (7) working days in advance of requirement for source inspection. Supplier shall make available all records, facilities, equipment, personnel, and assistance necessary to evaluate items, witness testing and/or perform First Article Inspection of the items supplied.	SNC requires Suppliers to permit SNC or SNC's designated representatives to perform on-site source inspection on, as indicated, at the Supplier's Facilities providing access to facilities, equipment, records, and personnel, as well as

			notify SNC at least seven (7) working days in advance of the date that Purchase Order items will be ready for inspection.
QA009A	Access to Supplier Facilities by SNC &/or SNC's Customers	Products/Services procured under this purchase order are subject to SNC's, and/or SNC's customer(s), audit of the supplier's facility. SNC shall notify the supplier's Quality Organization at least seven (7) working days in advance of any required audit(s) of the supplier's facility. Supplier shall make available all records, facilities, equipment, personnel, and assistance necessary to complete the audit of the supplier's facility.	SNC requires Suppliers to permit SNC or SNC's customers to perform audits at the Supplier's facilities of all items on the Purchase Order, as indicated. Suppliers are required to provide access to facilities, equipment, records, and personnel. SNC commits to notifying Suppliers at least seven (7) working days in advance of the date that the audit will take place.
QA010	Customer / Government Source Inspection	Government or SNC customer reserves the right to inspect at source any supplies or services included in this purchase order.	When this Quality Code is applied to a Purchase Order, SNC requires Suppliers to acknowledge agreement to the Government and/or SNC Customer on-site inspection requirement at the time of Purchase Order acceptance.
QA010A	Customer / Government Source Inspection	Government inspection is mandatory prior to shipment from Manufacturer's/Supplier's plant. Supplier shall notify the appropriate Government Organization at least seven (7) working days in advance of requirement for source inspection. Upon receipt of this Purchase Order, a copy will be furnished to the Government representative who services the Manufacturer's/Supplier's plant. In the event the representative or office cannot be located, the SNC Quality Organization shall be notified immediately.	When this Quality Code is applied to a Purchase Order, SNC requires Suppliers to acknowledge agreement and compliance to this requirement at time Purchase Order acceptance. Suppliers are required to notify the appropriate Government Organization at least seven (7) working days in advance of requirement for source inspection. In the event the representative or office cannot be located, the SNC Quality Organization shall be notified immediately in writing.
QA012	Inspection and Test Reports	Supplier shall furnish with each shipment a report of tests, including actual dimensions and/or results, completed during Supplier final acceptance. Data shall be provided for all parts in the shipment unless sampling has been authorized in writing by SNC Quality Assurance.	SNC requires Suppliers to perform final acceptance testing and inspection of all Drawing Dimensions for each line item on the Purchase Order, as indicated, or sampling, as specified, and electronically submit the full inspection report to SNC, as well as place a printed copy in the shipping container.
QA015	Supplier Material Review Board (MRB) Authority	Supplier is not authorized Use-As-Is or Repair MRB authority. Only shipments of supplies and/or services that conform to all of the requirements will be accepted unless authorized in writing by the Buyer.	SNC requires Suppliers to acknowledge agreement and compliance to this requirement at the time of Purchase Order acceptance. SNC retains the authority over disposition of nonconforming items produced by the Supplier and will only accept conforming items meeting all requirements on the Purchase Order, as indicated.
QA015B	Nonconformance Data Requirements	Seller must document the nonconformance on Seller's approved NC reporting document that include details of requirements, location of requirements, the actual nonconforming condition, method/instrument of inspection as applicable and actions taken prior to disclosure, i.e., investigations, level of product completeness, cause and corrective action. The Seller shall forward NC document to the SNC Buyer for engineering disposition.	For all Supplier identified nonconformances that are not meeting SNC's Purchase Order requirements, SNC requires Suppliers to document the actual nonconformance and supporting details, location of nonconforming requirements on the items, methods used to inspect that identified the nonconformance, and actions taken prior to disclosure to SNC. Suppliers are required to electronically

			submit the documented nonconformance to SNC and await engineering disposition from SNC.
QA016	Preservation and Packaging	Items supplied on this purchase order shall be suitably packaged to prevent damage from contamination, corrosion, handling and extended storage.	SNC requires Suppliers to determine the appropriate packaging to ensure item preservation for all line items on the Purchase Order, as indicated.
QA017	Failure Analysis and Corrective Action	Supplier shall conduct and report failure results and corrective action taken on all discrepant material returned to the Supplier. A failure analysis and report is required and shall reference the applicable SNC nonconforming material report number. The report shall be sent to the SNC Quality Organization for review and acceptance. Supplier must provide a detailed description of any rework performed.	For all returned / rejected material from SNC back to Suppliers, SNC requires Suppliers to perform a full failure analysis and document and report to SNC the root cause (s), containment, correction(s), and corrective action(s) to prevent recurrence.
QA036	Serial Number Assignment	If serialization is a requirement reference PO, subcontract or contact SNC buyer for serial number assignment.	SNC requires Suppliers to contact SNC for serial number assignment and apply serialization prior to shipment to SNC for all line items on the Purchase Order, as indicated.
QA038	Quality Management / Inspection System	The supplier shall maintain a system that conforms to an applicable approved standard such as AS9100 or ISO9001. Certification by an accredited 3rd party registrar will be accepted. The system will be subject to review at all times. Declaration of compliance with no formal accredited registrar will be subject to review and audit. The supplier shall notify SNC buyer of all significant changes including: facility location, ownership, senior management or quality system. Supplier must notify SNC within 10 business days of any changes in Quality Management System certification (ISO, AS9100, etc.) status.	SNC prefers that Supplier's Quality Management System is certified to ISO 9001 / AS9100 through a 3rd party Certification Body. SNC requires Suppliers to acknowledge this requirement when applied to a Purchase Order sending a current copy of the certification for SNC to maintain on file. If not certified to ISO 9001 / AS9100 through a 3rd party Certification Body, Suppliers are required to disclose this and acknowledge that SNC may perform an on-site Quality Management System audit.
QA044	General GIDEP Alerts and Advisories	The supplier shall participate in the Government Industry Data Exchange Program (GIDEP) and review product related alerts and advisories to determine if they affect the products/services provided to SNC. If affected, the supplier shall take action to notify SNC buyer and mitigate any negative effect agreed upon by supplier and SNC.	Suppliers are required to register for a free membership and be active members of GIDEP, sign up for Push Notifications, and review and respond accordingly to all notifications to determine any negative impact to products/services supplied to SNC. If there is a negative impact, Suppliers are required to notify SNC in writing and work towards a mutually agreeable solution to mitigate the negative effects of the reported failure(s).
QA047	Record Retention	In addition to requirements included in the referenced terms and conditions, seller must maintain all quality records for a period of seven (7) years unless otherwise specified, after shipment of all goods delivered under this order.	SNC requires Suppliers to acknowledge agreement and compliance to this requirement at time Purchase Order acceptance and to meet the Quality Records Storage period of seven (7) years, through either electronic record or hard copy record storage. Records must be protected from alteration or deterioration and be readily available upon request from SNC.
QA048	Key Characteristics Flow Down	Seller shall flow down applicable requirements to all of their Suppliers to ensure buyer's requirements, including key characteristics, are appropriately flowed down to all tiers within the supply chain.	SNC requires Suppliers to review the Key Characteristics identified on the Engineering Drawings and to flow these

			requirements to Sub-Tier Suppliers ensuring that all Key Characteristics have been met by the Sub-Tier Suppliers.
QA049	Change(s) in Product / Process	Seller is required to notify buyer of changes in product and/or process definition affecting the quality of products or processes being supplied. Buyer and/or buyer's affected customer representative must review and approve proposed process changes prior to implementation.	SNC requires change notification for any manufacturing location changes, addition of new manufacturing lines, etc. Changes must be communicated, in advance, to SNC for review and approval prior to making any changes.
QA064	Hazardous Material	Any usage of the following material shall be identified, documented, and provided with the deliverable product. a) Wiring insulation containing Polyvinyl Chloride (PVC) b) Hybrid Polyimide wiring insulation c) Beryllium containing materials d) Asbestos or asbestos-containing material (ACM), even in concentrations less than 1%. e) Polyimide (Kapton) insulated wire and cable f) Lithium-ion batteries shall not be used as a primary power source. g) The usage of the Lithium-ion batteries shall be identified, documented, and provided with the deliverable product. h) Lead, other than in the solder	SNC requires Suppliers to submit to SNC with shipment disclosure of presence of any of the listed items in SNC Quality Code 64a – 64h, as indicated, for line items on the Purchase Order.
QA065	Restricted Carcinogens	The Subsystem shall not contain any restricted carcinogens, as defined below, either in pure form or where the substance is present in a mixture at a concentration greater than 0.1% Acrylonitrile [107-13-1], b. enzene [71-43-2] - All uses involving benzene as a feedstock containing more than 50% of benzene by volume, c. Cyclophosphamide [50-18-0] - When used in preparation for therapeutic use in hospitals and oncological treatment facilities, and in manufacturing operations - Genuine research or analysis, d. 3,3'-Dichlorobenzidine [91-94-1] and its salts (including 3,3'-Dichlorobenzidine dihydrochloride [612-83-9]), e. Diethyl sulfate [64-67-5], f. Dimethyl sulfate [77-78-1], g. Ethylene dibromide [106-93-4], h. 4,4'-Methylene bis(2-chloroaniline) [101-14-4] MOCA, i. 3-Propiolactone [57-57-8] (Beta-propiolactone), j. Toluidine [95-53-4] and Toluidine hydrochloride [636-21-5] and k. Vinyl chloride monomer [75-01-4]	SNC requires Suppliers to submit to SNC with shipment disclosure of presence of any of the listed items in SNC Quality Code 65, as indicated, for line items on the Purchase Order. Noted that presence of these items is prohibited by SNC.
QA066	Prohibited Carcinogens	The Subsystem shall not contain any prohibited carcinogens, as defined in the list below, either in pure form or where the substance is present in a mixture at a concentration greater than 0.1%.: a. 2-Acetylaminofluorene [53-96-3], b. Aflatoxins, c. 4-Aminodiphenyl [92-67-1], d. Benzidine [92-87-5] and its salts (including e. benzidine dihydrochloride [531-85-1]), f. bis(Chloromethyl) ether [542-88-1], g. 4-Dimethylaminoazobenzene [60-11-7] Dimethyl Yellow), i. 2-Naphthylamine [91-59-8] and its salts, and j. 4-Nitrodiphenyl [92-93-3]	SNC requires Suppliers to submit to SNC with shipment disclosure of presence of any of the listed items in SNC Quality Code 66, as indicated, for line items on the Purchase Order. Noted that presence of these items is prohibited by SNC.

5 ALL SNC BAs QUALITY FLOW DOWN REQUIREMENTS BY PROCESS TYPE

This section contains General Quality Requirements by Supplier Manufacturing Process and/or Service Type that may be applied to POs from all SNC BAs.

5.1 CALIBRATION SERVICES

Code Number	Code Title	Code Description	Action Required and/or Expected Supplier Deliverable(s)
QA003C	Calibration (ISO/IEC 10012)	The supplier is required to maintain a Calibration System that is in conformance with the requirements of the latest revision of ISO 10012 as part of supplier's overall business management system. (Note that ISO 10012, current revision, is not a substitute for or an addition to the requirements of ISO/IEC 17025). Conformance is subject to audit by the buyer.	SNC requires Calibration Suppliers to maintain a 3 rd party accreditation for their Calibration System to the latest revisions of ISO 10012 and provide evidence of conformance to ISO 10012.
QA003D	Calibration Service (Non-Accredited / NIST Traceable)	The Calibration Service Supplier shall furnish Calibration Certificate(s) confirming traceability to National Institute of Standards (NIST) standards for all equipment and/or tool calibration services provided to Sierra Nevada Corporation (SNC). For all equipment or tools found to be in an Out of Tolerance condition, the Supplier must record on the Calibration certificate(s) the "as received / as found" and "adjusted / final" measurement values following Calibration. Equipment found to be Out of Tolerance must be reported to SNC no later than seven (7) business days after the Out of Tolerance condition has been found. Calibration of equipment and/or tools that is completed on site at SNC and found to be Out of Tolerance must be reported to SNC by the end of the on-site calibration service.	SNC requires the Calibration Service Supplier to submit to SNC with shipment Calibration Certificate(s) confirming traceability to NIST standards for all equipment and/or tool calibration services provided to SNC. If there are Out of Tolerance conditions found with SNC's equipment and/or tools, this must be documented on the Calibration Certificate, as required, and reported to SNC within seven (7) business days if calibration is not being done at an SNC facility or at the end of the on-site calibration if the service is being provided at an SNC facility.
QA003E	Calibration & Testing Service (ISO/IEC 17025 Accredited / Traceable Std)	The Calibration & Testing Service Supplier shall (1) have (or use) a testing and calibration laboratory accredited to ISO/IEC 17025, current revision, and (2) furnish Calibration certificate(s) confirming traceability to International System of Units (SI) standards and/or traceable to National Institute of Standards (NIST), for all equipment and/or tool calibration services provided to Sierra Nevada Corporation (SNC). For all equipment or tools found to be in an Out of Tolerance condition, the Supplier must record on the Calibration certificate(s) the "as received / as found" and "adjusted / final" measurement values following Calibration. Equipment found to be Out of Tolerance must be reported to SNC no later than seven (7) business days after the Out of Tolerance condition has been found. Calibration of equipment and/or tools that is completed on site at SNC and found to be Out of Tolerance must be reported to SNC by the end of the on-site calibration service.	SNC requires the Calibration Service Supplier to have or use a testing and calibration laboratory that is current in its accreditation to ISO/IEC 17025 to complete services ordered and submit to SNC with shipment Calibration Certificate(s) confirming traceability to SI and/or NIST standards for all equipment and/or tool calibration services provided to SNC. If there are Out of Tolerance conditions found with SNC's equipment and/or tools, this must be documented on the Calibration Certificate, as required, and reported to SNC within seven (7) business days if calibration is not being done at an SNC facility or at the end of the on-site calibration if the service is being provided at an SNC facility.
QA003F	Calibration & Verification Service (ANSI / NCSL Z540 Accredited / Traceable Std)	The Calibration & Verification Service Supplier shall (1) have (or use) a calibration and/or verification laboratory accredited to ANSI/NCSL Z540, current revision, and (2) furnish Calibration / Verification certificate(s) confirming traceability to International System of Units (SI) for all equipment and/or tool calibration services provided to Sierra Nevada	SNC requires the Calibration Service Supplier to have or use a calibration and verification laboratory that is current in its accreditation to ANSI / NCSL Z540 to complete services ordered and submit to SNC with shipment Calibration Certificate(s) confirming traceability to SI standards for all equipment and/or tool calibration and verification services

		Corporation (SNC). For all equipment or tools found to be in an Out of Tolerance condition, the Supplier must record on the Calibration certificate(s) the “as received / as found” and “adjusted / final” measurement values following Calibration. Equipment found to be Out of Tolerance must be reported to SNC no later than seven (7) business days after the Out of Tolerance condition has been found. Calibration of equipment and/or tools that is completed on site at SNC and found to be Out of Tolerance must be reported to SNC by the end of the on-site calibration service.	provided to SNC. If there are Out of Tolerance conditions found with SNC’s equipment and/or tools, this must be documented on the Calibration Certificate, as required, and reported to SNC within seven (7) business days if calibration is not being done at an SNC facility or at the end of the on-site calibration if the service is being provided at an SNC facility.
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5.2 CIRCUIT CARD ASSEMBLY / PRINTED CIRCUIT BOARDS

Code Number	Code Title	Code Description	Action Required and/or Expected Supplier Deliverable(s)
QA026	Ball Grid Array X-Ray	Supplier shall furnish evidence of x-ray inspection of all ball grid array solder connections. Electronic copies of x-ray photos on CD preferred.	SNC requires that Suppliers perform 2-D or 3-D x-ray on all ball grid array (BGA) solder joints inspecting for voids, shorts, opens, etc. on the printed circuit board assemblies and submit all photographs electronically to SNC.
QA027	Conformal Coating	Supplier must have material Conformal Coated prior to shipment to SNC. Conformal Coating must be compliant to IPC-CC-830 or equivalent. The thickness of the conformal coating shall be as shown in table 10-1 (IPC/EIA J-STD-001) for the type specified.	SNC requires that Suppliers apply conformal coating to line items specified on the Purchase Order and submit confirmation of all requirements of conformal coating meeting IPC-CC-830, current revision, as applicable.
QA028	PCB Fab Requirements	The Supplier fabricating printed circuit boards (PCBs) must provide the following requirements for this order: NETLIST Test Certificate, TDR report, cross section report (w/coupon), and one solder sample with every fabrication lot.	SNC requires that Suppliers complete and submit to SNC via a data package included in the shipping container a full electronic test report for each printed circuit board that is shipped to SNC under the terms of the Purchase Order and accompanying cross sections and solder samples. Electronic test reports shall include a NETLIST Test Certificate, Time Domain Reflectometry (TDR) report with measured values and a “Pass/Fail” determination for each measured value vs. the required impedance. PCB cross section photos with corresponding coupons and one solder sample for each Supplier fabrication build lot is also required.

5.3 RAW &/OR COMPOSITE MATERIAL MANUFACTURING

Code Number	Code Title	Code Description	Action Required and/or Expected Supplier Deliverable(s)
QA008A	Temperature Sensitive Material	Ship by next day express packaged in dry ice (10 degrees F maximum). Include temperature recorder in shipment.	SNC requires Suppliers to ship material with a non-reversible time / temperature indicator tag with a tag accuracy guarantee to be +/-1 degree to indicate that the shipment has been handled and stored properly during transport through the supply chain. The indicator tag shall be applied directly to the material packaging and shall confirm that the temperature of the material has not exceeded 10°F maximum.
QA008B	Temperature Sensitive Material	Ship refrigerated (40 degrees F maximum). Include temperature recorder in shipment.	SNC requires Suppliers to ship material with a non-reversible temperature label that consists of one or more heat-sensitive indicators sealed under transparent, heat resistant windows affixed directly to the material packaging and confirms that the temperature of the material has not exceeded 40°F maximum.
QA013A	Chemical and Physical Test Reports	Test report documentation indicating chemical composition and/or actual physical properties identifiable to each lot, batch or heat treat lot shall be on file and made available to Buyer upon request. Documentation shall be validated by an authorized Supplier's representative.	SNC requires Suppliers to create, maintain, and preserve test report records indicating chemical composition and/or physical properties, as specified on the Purchase Order line item(s), that have been validated as accurate by an authorized Supplier representative. SNC Buyers may request copies of this documentation.
QA013C	Raw Material Certification / Test Reports - Submit with Shipment	Test report documentation indicating chemical composition and/or actual physical properties identifiable to each lot, batch or heat treat lot shall be kept on file and submitted with shipment. Reports must contain actual numerical values of analysis or test results, rather than a range or PASS/FAIL attribute data. Documentation shall be validated by an authorized Supplier's representative.	SNC requires Suppliers to create, maintain, preserve and submit to SNC with shipment test reports / records that have been reviewed and signed by Supplier's authorized representative with signature and job title (e.g. – Quality Manager) that include chemical composition and/or physical properties for each processed lot, batch or heat treat performed that interprets the test result and documents "PASS/FAIL", as applicable, per Purchase Order line item(s) requirements.

5.4 ELECTRONIC COMPONENT / ELECTRONIC ASSEMBLY MANUFACTURING / WIRE AND CABLE HARNESS

Code Number	Code Title	Code Description	Action Required and/or Expected Supplier Deliverable(s)
QA007A	Packaging of Electrostatic-Sensitive Devices	This is an electrostatic sensitive device and shall be handled and packaged in accordance with ANSI / ESD S20.20, current version. Use of Pink Poly packaging material for shipment of product to SNC is strictly prohibited.	SNC requires Suppliers to adhere to the industry standard requirements of ANSI S20.20 in establishing, implementing, and maintaining an ESD control program to protect electrical or electronic parts, assemblies, and equipment susceptible to damage by electrostatic discharges (ESD) \geq 100 Volts HBM, 200 Volts CDM, and 35 Volts on isolated conductors. SNC requires Suppliers to ship the electrostatic-sensitive devices for each line item on the PO in industry approved ESD packaging that does not contain any pink/poly packaging material.
QA020A – 20Z	Electronic Process & Workmanship	The following requirements apply to this order. a. IPC-A-610 Class 1 Acceptability of Electronic Assemblies b. IPC-A-610 Class 2 Acceptability of Electronic Assemblies c. IPC-A-610 Class 3 Acceptability of Electronic Assemblies d. IPC-A-600 Class 1 Acceptability of Printed Boards e. IPC-A-600 Class 2 Acceptability of Printed Boards f. IPC-A-600 Class 3 Acceptability of Printed Boards g. MIL-PRF-55110 General Specification For Printed Wiring Boards h. IPC/EIA J-STD-001 Class 1 Requirements for Soldered Electrical and Electronic Assemblies i. IPC/EIA J-STD-001 Class 2 Requirements for Soldered Electrical and Electronic Assemblies j. IPC/EIA J-STD-001 Class 3 Requirements for Soldered Electrical and Electronic Assemblies k. IPC/WHMA-A-620 Class 1 Requirements and Acceptance for Cable and Wire Harness Assemblies l. IPC/WHMA-A-620 Class 2 Requirements and Acceptance for Cable and Wire Harness Assemblies m. IPC/WHMA-A-620 Class 3 Requirements and Acceptance for Cable and Wire Harness Assemblies n. Compliance to EU directive for Waste Electrical and Electronic Equipment (WEEE) is required o. Compliance to EU directive for Restriction of Hazardous Substances (RoHS) is required p. EEE Parts Age- (Electronic, Electrical, and Electromechanical Parts) shall not be greater than 3 years old at time of receipt at Buyer, unless otherwise identified in the purchase order or statement of work.	SNC will assign one or more of the listed applicable industry standards to the items on the Purchase Order, as indicated. Suppliers are required to review the requirements and confirm through Purchase Order acknowledgement that all requirements in the applicable industry standard(s) can, will, and have been met on items delivered to SNC.

		<p>q. NASA-STD-8739.1 Workmanship Standard for Staking and Conformal Coat of Printed Wiring Boards and Electronic Assemblies</p> <p>r. NASA-STD-8739.2 Workmanship Standard for Surface Mount Technology</p> <p>s. NASA-STD-8739.3 Workmanship Standard for Soldered Electrical Connections</p> <p>t. NASA-STD-8739.4 Workmanship Standard for Crimping, Interconnecting Cables, Harnesses and Wiring</p> <p>u. Single Date/Lot Code Items delivered under this order shall be from a single date/lot code. Shipments of multiple date/lot codes must be authorized in advance by SNC buyer.</p> <p>v. Items delivered under this order shall utilize tin-lead solder with more than 3% lead by weight in accordance with latest revision of IPC J-STD requirements. All other solders will not be used without prior written approval from Sierra Nevada Corporation.</p> <p>w. IPC/EIA J-STD-001 Space Applications Electronic Hardware Addendum to IPC J-STD-001 Class 3 Requirements for Soldered Electrical and Electronic Assemblies. When this code is applied Code 20j is required.</p> <p>x. Magnet wire greater than 2 years from date of manufacturer must be re-screened per NASA EEE-INST-002 Tables 1B and 2B. Magnet wire older than 5 years cannot be used.</p> <p>y. EEE Parts Age- The shelf life for all electronic parts prior to installation shall not exceed seven years for Grade 1 parts and ten years for Grade 2 or 3 parts unless verification/recertification testing has been performed.</p> <p>z. IPC/WHMA-A-620 Space Applications Electronic Hardware Addendum to IPC/WHMA-A-620 Class 3 Requirements and Acceptance for Cable and Wire Harness Assemblies. When this code is applied, Code 20m is required.</p>	
QA031	Mercury Contamination	Articles furnished under this order shall be free from Mercury contamination.	SNC requires that Suppliers complete and submit to SNC with shipment confirmation that the items shipped against the Purchase Order line items, as indicated, are confirmed to be free from Mercury contamination.
QA043A	Counterfeit Parts Avoidance - Assemblies	<p>1) Unless approved in writing by the Buyer, Seller shall use only original equipment manufacturers or original component manufacturers (OEM/OCM) or an OEM/OCM Authorized/Franchised Dealer or Distributor.</p> <p>2) Seller shall verify all documents that provide chain of custody to the original manufacturer for each lot in a shipment. Upon request from Buyer, these documents shall be provided to SNC.</p>	SNC requires that Suppliers complete and submit to SNC with shipment a data package for items specified on the Purchase Order that only OEM / OCM parts have been used to satisfy SNC's Purchase Order requirements and supporting documentation to authenticate the chain of custody, if requested by SNC Buyer.
QA043B	Counterfeit Parts Avoidance - Components	Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for each component in a shipment.	SNC requires that Suppliers complete and submit to SNC with shipment supporting documentation to authenticate the chain of custody of parts used to satisfy SNC's Purchase Order requirements to the original manufacturer.
QA043C	Counterfeit Part Risk Mitigation	SNC has incorporated this material into the Counterfeit Part Risk Mitigation Program to address known risk of receiving suspect/counterfeit material. This	SNC requires that Suppliers complete and submit to SNC with shipment a data package for items specified on the

	<p>material can only be procured from the OCM/OEM or one of its Authorized Distributors. The supplier shall provide the required documentation based on supplier designation detailed below:</p> <p>A) OEM/OCM – Provide OEM/OCM Certificate of Conformance</p> <p>B) Authorized Franchise Distributor for OEM/OCM – Provide Authorized Franchise Distributor’s Certificate of Conformance and/or OEM/OCM Certificate of Conformance. Distributor must provide SNC buyer documentation from OEM/OCM validating they are an Authorized/Franchised Distributor. Distributor is required to immediately notify SNC buyer if their Authorization from OEM/OCM is changed, expires, or is revoked</p> <p>C) Raw Material – Provide Certificate of Conformance from the OEM/Mill and all Certificate of Conformance with no more than three (3) tiers of distribution traceable to the OEM/Mill and PO from second tier supplier. The OEM/Mill is tier one; there should be no more than one additional distributors between the mill and SNC. A Certificate of Conformance must accompany the material substantiating OEM lot/batch traceability for each tier of custody</p> <p style="padding-left: 40px;">Tiers of distribution (EOM/Mill – Distributor 1 PO traceability to OEM/Mill required – SNC)</p> <p>For all non-metallic raw material lot/batch traceability is required from OEM through each tier of distribution.</p> <p>For metallic raw material chemical/physical analysis traceability is required from OEM/Mill through each tier of distribution identifiable with the lot/batch number marked on the material. The supplier shall provide one Certificate of Conformance with a legible name, stamp, or signature indicating compliance through supplier’s approved quality system for each shipment. The Certificate of Conformance shall contain, as a minimum, the specifications and/or drawing number, revision level, the name of the manufacturer, the lot number/batch number, date or serial number, purchase order number (and item number when applicable) and a factual statement that the product has been manufactured with new and authentic material according to the applicable standards and specifications, inspection/test data and OEM traceability is on file at the supplier’s facility. Special processes shall be included as an attachment with the C of C. See tiers of distribution above as an example and may be used at the supplier's option.</p> <p>D) For Mil-Spec parts the OEM is determined by the Qualified Product List (QPL) identifying the approved manufacturer(s). If no QPL exists for a part number, the SNC buyer must be notified that the part cannot be procured in compliance with this requirement</p> <p>E) Only New and Unused parts/material shall be supplied without written permission from the SNC buyer, typically requiring SNC customer concurrence.</p>	<p>Purchase Order that only OEM / OCM parts have been used to satisfy SNC’s Purchase Order requirements and supporting documentation that satisfies the relevant SNC Quality Code 43C A – E requirements.</p>
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QA043D	Counterfeit Parts Avoidance - Assemblies or Components	Seller shall implement systems that assure traceability of all material(s) from the Original Component / Equipment Manufacturer (OCM / OEM) to product acceptance by the Buyer. For electronic parts, Seller shall have processes that enable tracking from the OCM / OEM or the OCM / OEM Authorized Distributors, whether the electronic component is supplied as a discrete electronic part or is contained in an assembly. If supplying discrete electronic components, Seller shall be the OCM / OEM or an OCM / OEM Authorized Distributor. Unless approved in writing from Buyer, Seller shall supply or use parts only from OCM / OEM or an OCM / OEM Authorized Distributor.	SNC requires that Suppliers provide electronically to SNC a Statement of Conformance that Supplier meets all requirements outlined in SNC Quality Code 43D.
QA044A	Connector GIDEP	Defense Logistics Agency (DLA) audits of ITT Cannon Qualified Parts List (QPL) electrical connectors (Federal Supply Classification (FSC) 5935) resulted in the issuance of Government-Industry Data Exchange Program (GIDEP) notices. The affected MIL-DTLs are: MIL-DTL-38999, MIL- DTL-26482, MIL-DTL-83723, MIL-DTL-24308, MIL-DTL-83733, and MIL-DTL-83513. SNC cannot accept end products suspected of containing these connectors without Program Office/Buying Command approval. In addition, ITT Cannon has been removed from the QPL program for the MIL-DTLs referenced above effective July 5, 2017. If you are not familiar with GIDEP notices, please visit DLA’s website: https://search.usa.gov/search?affiliate=dod_dla&query=GIDEP	SNC requires that Suppliers provide electronically to SNC a Statement of Conformance that Supplier meets all requirements outlined in SNC Quality Code 44A.

5.5 EPOXY, ADHESIVE, ELASTOMERIC MATERIAL, AND RUBBER MANUFACTURING

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA008	Shelf-life Material, General	Supplier shall individually identify each unit and/or container, with batch number, manufacturing date, shelf life in months and/or expiration date. Supplier shall advise SNC of any special handling or storage requirements. Supplier shall only deliver shelf life items having a minimum of 65% shelf life left.	SNC requires Suppliers to ensure that each item shipped to SNC that has a limited shelf life have a minimum of 65% shelf life remaining, as calculated by supplier based on manufacturer information, and each unit / container clearly labeled with the batch number, manufacturing date, shelf life in months and/or expiration date.
QA008C	Limited-life Material, Age Sensitive Rubber and / or Elastomeric Material	Items shall meet the relevant requirements of SAE AS5316, SAE AS1933, and/or MIL-HDBK-695, current revisions, as applicable. Supplier shall individually identify each unit and/or container with batch / lot number, manufacturing date or cure date, shelf life and/or expiration date. Shelf life, which is specified in the applicable controlling standard as “unlimited”, shall have an expiration date 25 years from the manufacturing / cure date applied. Supplier shall advise SNC of any special handling or storage requirements. Supplier shall only deliver shelf life items to SNC having a minimum 65% shelf life remaining upon receipt at SNC.	SNC requires that Suppliers provide electronically to SNC a Statement of Conformance that Supplier meets all requirements outlined in SNC Quality Code 8C.

QA008C1 – 8C6	Limited-life Material, Age Sensitive Rubber and / or Elastomeric Material	Supplier shall individually identify each unit and/or container with batch / lot number and manufacturing / cure date. Material shall have a date of manufacture / cure within [6 - 120] months prior to receipt at SNC.	SNC requires Suppliers to ensure that each item shipped to SNC that has a limited shelf life have each unit / container clearly labeled with the batch / lot number and manufacturing / cure date within the specified period by SNC of 6 – 120 months.
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5.6 HARDWARE MANUFACTURING – BUILD TO PRINT & COTS

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA015A	Non-Conforming Hardware	Supplier must notify the buyer of any nonconforming conditions related to product while at the Suppliers location prior to shipment and/or delivery or after release to the buyer. Written authorization signed by Buyer’s Engineering and Quality Assurance Representatives is required prior to shipping items which do not comply with the drawings, or specifications. As requested from Buyer, if it is determined that seller or seller’s sub tier supplier is responsible for the nonconformance, corrective action must be documented and accomplished in a timely manner. Written Buyer authorization is required prior to performing any repair operations or any “use as is” dispositions on deliverable items. Should it be determined that the corrective action is not adequate, clarification may be requested or seller may be disqualified from use A copy of the Buyer Nonconformance Document authorizing shipment shall be provided with the shipment.	SNC requires Suppliers to acknowledge agreement and compliance to this requirement at the time of Purchase Order acceptance. SNC retains the authority over disposition of nonconforming items produced by the Supplier and will only accept conforming items meeting all requirements on the Purchase Order, as indicated, unless otherwise approved in writing by SNC. SNC requires Suppliers to perform root cause and corrective action on nonconformances created by Suppliers or Sub-Tier Suppliers and submitted electronically to SNC, as required.

5.7 METAL FABRICATION AND MACHINED PARTS

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA016B	Preservation and Packaging (VCI Prohibited)	Items supplied on this purchase order shall be suitably packaged to prevent damage from contamination, corrosion, handling and extended storage. Vapor corrosion inhibitor (VCI) is prohibited.	SNC requires Suppliers to determine the appropriate packaging to ensure item preservation for all line items on the Purchase Order, as indicated. Suppliers shall not use Vapor Corrosion Inhibitor (VCI).
QA035	High Energy Machining	Supplier shall contact SNC buyer for approval prior to using any type of high-energy machine work on items manufactured under this order. This includes	SNC requires Suppliers to obtain written approval from SNC prior to proceeding with the use of any type of high energy

		Electrical Discharge Machining, Laser Machining, Elox Cutting, or any other electrical milling, cutting, or machining method.	machine work, including but not limited to Electrical Discharge Machining, Laser Machining, Elox Cutting, and/or electrical milling, cutting, or machining in the fulfillment of SNC's Purchase Order requirements.
QA039	Passivation for COTS Hardware (Stainless Steel)	Passivation per ASTM-A967 is required. Evidence of passivation (Certificate of Compliance) is required to be delivered with this line item.	SNC requires that Suppliers provide electronically to SNC a Certificate of Conformance that Supplier has completed passivation of Purchase Order line item(s) in accordance with the requirements of ASTM-A967.
QA039A	Passivation for Corrosion Resistant Steel (CRES) Parts	Passivation per AMS 2700 is required. Evidence of passivation (Certificate of Compliance) is required to be delivered with this line item.	SNC requires that Suppliers provide electronically to SNC a Certificate of Conformance that Supplier has completed passivation of Purchase Order line item(s) in accordance with the requirements of AMS 2700.
QA044B	GIDEP - Kobe Steel Alert	SNC prohibits the use of any materials and/or products procured from or through the Kobelco Kobe Steel Group without prior written approval from SNC. Reference GIDEP AAN-U-18-097 for additional information.	SNC requires that Suppliers provide electronically to SNC a Certificate of Conformance that Supplier certifies that line item(s) in the Purchase Order for SNC are confirmed to not contain any materials and/or products procured or through the Kobelco Kobe Steel Group, unless authorized in advance of Purchase Order fulfillment by SNC.

5.8 PAINTING, CHEMICAL MANUFACTURING, COATINGS

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA012D	Inspection and Test Reports	Seller shall furnish with each delivery a report of actual paint CIE L*a*b* color coordinates (including calculated ΔE_{ab}^*) obtained from spectrophotometric analysis of the item as defined in AMS-STD-595. ΔE_{ab}^* allowable tolerance is defined within the applicable paint specification on the part drawing.	SNC requires Suppliers to comply with the requirements of AMS-STD-595, current revision, and the color space identification specified by the International Commission on Illumination for identifying specified paint colors and submit to SNC with shipment a three coordinate color analysis report, per the CIELAB color scale, as required, for the specified line items on the Purchase Order, as indicated.
QA016A	Material Safety and Shipping Data	A Safety Data Sheet (SDS) shall be supplied with each shipment. Supplier shall submit the proper shipping classification, flash point, and information necessary to properly ship the articles in compliance with CFR Title 49. Articles will not be accepted unless proper documentation is included with shipment.	SNC requires Suppliers to submit to SNC with shipment Safety Data Sheet(s) (SDS) for each line item, as specified, on the Purchase Order at the time of shipment to SNC. SNC also requires Suppliers to document the shipping classification, flash point, and all other relevant information regarding the item(s) on the Packing Slip and placed on the outside of the shipping container.
QA067	Hazardous Chemicals	Should be identified when the chemical listed below are used as indicated: a. Lead and Compounds - For abrasive blasting at a concentration of greater than 0.1% as lead or which would expose the operator to levels in excess of those set in the regulations covering lead	SNC requires Suppliers to submit to SNC with shipment disclosure of presence of any of the listed items in SNC Quality Code 67, as indicated, for line items on the Purchase Order.

		<p>b. Lead carbonate - For spray painting, c. Methanol (methyl alcohol), if the substance contains more than 1% by volume - For spray painting, d. Nickel and its compounds - For abrasive blasting at a concentration of greater than 0.1% as nickel, e. Nitrates - For wet abrasive blasting, f. Nitrites - For wet abrasive blasting, g. Radioactive substance of any kind where the level of radiation exceeds 1 Bq/g - For abrasive blasting, so far as is reasonably practicable, h. Tetrachloroethane - For spray painting, i. Tetrachloromethane (carbon tetrachloride) - For spray painting, j. Tin and its compounds - For abrasive blasting at a concentration of greater than 0.1% as tin, k. Tributyl tin - For spray painting.</p>	
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5.9 SPECIAL PROCESSES

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA002C	Certificate of Conformance (or equivalent)	The supplier shall provide with each shipment a listing of each specific Quality Code with confirmation of compliance to same and listing of traceability to the original source of special processes, parts, materials and testing.	SNC requires a stand-alone Certificate of Conformance for each line item shipped that identifies each SNC Quality Code Number from the Purchase Order indicating that all items in the shipment meet SNC's requirement and a related listing of traceability to the original source of manufacture for special processes, parts, materials, and/or testing completed.
QA013G1	Requirements for Non-Critical Hardware Non-Destructive Testing (NDT) / Non-Destructive Evaluation (NDE) Personnel	Supplier and any sub-tier Suppliers performing NDT / NDE such as, but not limited to, penetrant, radiographic, ultrasonic, eddy current, computed tomography, etc., shall only use personnel qualified in accordance with AIA / NAS NAS410, NAS CERTIFICATION & QUALIFICATION OF NONDESTRUCTIVE TEST PERSONNEL. Use of personnel qualified to Level I – Limited shall be approved prior to production by the SNC Quality organization. The NDT / NDE Supplier shall be subject to review and audit at all times. A traceable Certificate of Conformance (CofC) from the NDT / NDE Supplier shall be provided with each shipment. A copy of the technique sheet(s) shall be included with the first shipment, at a minimum, and shall be included with subsequent shipments upon any changes to the NDT / NDE technique.	SNC requires Suppliers performing NDT / NDE, as specified on the Purchase Order, to acknowledge acceptance and compliance that personnel are qualified to Level I, per AIA / NAS NAS410. Suppliers shall submit to SNC with shipment a Certificate of Conformance for the NDT / NDE testing that is traceable from the supplier performing the NDT / NDE testing with each shipment to SNC to satisfy Purchase Order line item(s) requirements. For the first shipment to a SNC Purchase Order, Suppliers are required to submit to SNC with shipment a copy of the actual technique sheet that was referenced to perform the NDT / NDE and submit to SNC with shipment subsequent technique sheets referenced if changes are made to the NDT / NDE process to satisfy SNC's requirements.
QA013G2	Requirements for Critical Hardware for	Supplier and any sub-tier Suppliers performing NDT / NDE such as, but no limited to, penetrant, radiographic, ultrasonic, eddy current, computed tomography, etc., shall only use personnel qualified in accordance with AIA / NAS NAS410, NAS	SNC requires Suppliers performing NDT / NDE, as specified on the Purchase Order, to acknowledge acceptance and compliance that personnel are qualified to Level II, per AIA

	Non-Destructive Testing (NDT) / Non-Destructive Evaluation (NDE) Personnel	CERTIFICATION & QUALIFICATION OF NONDESTRUCTIVE TEST PERSONNEL, minimum Level II. The NDE supplier shall be subject to review and audit at all times. All supplier technique sheets shall be reviewed and approved in writing by the SNC Quality Organization prior to use by Supplier. A traceable Certificate of Conformance (CofC) from the NDT / NDE supplier shall be provided with EACH shipment.	/ NAS NAS410. Suppliers shall submit to SNC with shipment a Certificate of Conformance for the NDT / NDE testing that is traceable from the supplier performing the NDT / NDE testing with each shipment to SNC to satisfy Purchase Order line item(s) requirements. For all shipments to a SNC Purchase Order, Suppliers are required to submit to SNC with shipment a copy of the actual technique sheet that will be used to perform the NDT / NDE and obtain written approval from the SNC Quality Organization prior to proceeding with the testing.
QA013G3	Requirements for Non-Destructive Testing (NDT) / Non-Destructive Evaluation (NDE) Inspection Reports	All NDT / NDE such as, but not limited to, penetrant, radiographic, ultrasonic, eddy current, computed tomography, etc., shall have a NDT / NDE Inspection Report provided from the NDT / NDE Supplier with EACH shipment, and shall include (1) A unique report identifier, and, if applicable, the specific revision of the Inspection Report; (2) Purchase Order Number, (3) Tested / Evaluated Part Number and Revision, (4) Tested / Evaluated Part Serial Number(s) and/or lot number(s), (5) The NDT / NDE Standard with applicable method / type / class / form / grade / sensitivity level, etc., (6) Acceptance Criteria, (7) Identification of the NDT / NDE Technique Number and Revision used, (8) Inspection Date, (9) Report Date, (10) Inspection Results, and (11) The Qualified Inspector's Name, Signature and/or Stamp, Statement of their Qualification standard(s) (i.e. AIA / NAS NAS410, ANST, etc.), and the Qualified Inspector's Certification Level.	SNC requires all NDT / NDE inspection performed by Suppliers as specified on the Purchase Order to be documented on a test report and submitted electronically to SNC. The report must contain the eleven (11) items stated in the Quality Code requirement 13G3.
QA013J	Special Process Control (NADCAP Accredited)	Supplier and any sub-tier supplier performing special processes (examples include heat treating, welding, coating, plating, non-destructive testing, etc.) shall be NADCAP accredited for the process called out by the SNC provided controlling documentation. Supplier shall maintain records verifying accreditation of special processes and personnel. Evidence of accreditation shall be provided with the shipment. The Certificate of Conformance shall list the industry processing standard, type, class, etc. for each NADCAP Certified process being performed. Suppliers must have controls in place and documented for approving Sub-Tier suppliers, as applicable, to ensure they are meeting the industry processing standards to perform the relevant Special Process.	SNC requires Suppliers and sub-tier suppliers performing the requested special processes for SNC to ensure that those special processes are NADCAP accredited. Suppliers are to maintain records verifying current accreditation, as well as submit to SNC with shipment evidence of accreditation for the special processes used to fulfill the Purchase Order to SNC that lists the industry processing standard used, type, class, etc. Suppliers are required by SNC to maintain controls that are applied to sub-tier suppliers to ensure sub-tiers effectively meet the required industry processing standards.
QA013K	Special Process Control (General / Non-NADCAP Accredited)	Supplier and any sub-tier supplier shall provide proof of conformance to industry standards for performing special processes (examples include heat treating, welding, coating, plating, non-destructive testing, etc) called out by the SNC provided controlling documentation. The Certificate of Conformance shall list the relevant industry processing standard being performed by the Supplier, the type of special process, class, etc. Suppliers must have controls in place and documented for approving Sub-Tier suppliers, as applicable, to ensure they are meeting the industry	SNC requires Suppliers and sub-tier suppliers performing the requested special processes for SNC to ensure that special processes are performed in accordance with the relevant industry standard. Suppliers are required to submit to SNC with shipment a Certificate of Conformance that lists the industry processing standard used, the type of special process, class, etc to fulfill the SNC Purchase Order requirement. Suppliers are required to maintain

		processing standards to perform the relevant Special Process. Supplier shall maintain records verifying that special processes and personnel are certified, as necessary.	records verifying that special process and personnel are certified, as required and maintain controls that are applied to sub-tier suppliers to ensure sub-tiers effectively meet the required processing standards.
QA037	Lot / Batch Traceability	All parts, materials, and related documents shall be segregated and identified by a manufacturing lot or batch number by the supplier, which shall include the heat number, heat code, heat lot number, melt number, manufacturing lot number, or date code. Documentation shall be maintained on file to permit traceability from the delivered item back through its manufacture and inspection to the procurement records on its constituent parts and materials. Where marking of the parts is not practical, the smallest container packaged shall be marked with the above data.	For Special Processes, as indicated on the Purchase Order, SNC requires Supplier to segregate and identify each manufacturing lot / batch number with the heat number, heat code, heat lot number, melt number, manufacturing lot number, and/or date code. Supplier is required to maintain on file records of traceability.

6 AVIATION / AIRCRAFT PARTS AND SERVICES SUPPLIER QUALITY FLOW DOWN REQUIREMENTS

This section contains Supplier Quality Requirements for Aircraft / Airframe Parts and/or Services, including Airframe / Aircraft Maintenance, Modification, Overhaul, Repair, Supplemental Type Certificate (STC), and/or Return to Service (RTS) that may be applied to POs primarily from SNC's IAS and/or IMS BAs.

6.1 AIRCRAFT / AIRFRAME SPECIFIC PARTS / FAA SERVICES

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA024	Aviation Sale Documents	All repaired, rebuilt or overhauled items offered for sale to SNC or its Divisions must be current with all applicable service bulletins, airworthiness directives or other manufacturer requirements and include certification documents.	
QA030A	Burn Test Data	Supplier must provide Burn Testing Compliance Report in accordance with applicable 14 CFR requirement identified within the Purchase Order, signed by an FAA DER. Part Number, Lot Number, Batch Number, must be identified, as applicable, for each product tested.	
QA062	Fungus Resistance	All materials used in the construction of this item shall be non-nutrients for the growth of fungi, either through their composition or through previous testing to RTCA/DO-160G Environmental Conditions and Test Procedures for Airborne Equipment, Section 13 Fungus Resistance or MIL-STD-810F, Method 508.5 (fungus).	SNC requires Suppliers to complete and submit to SNC with shipment a Certificate of Conformance indicating the line items meet all requirements of SNC Quality Code 62.
QA063	Flammability Requirements	Product meets the flammability requirements per RTCA/DO-313 or RTCA/DO-160G (G only), Section 26. (If in Zone 1 or 2).	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Conformance indicating the line items meet the flammability requirements per RTCA/DO-313 or RTCA/DO-160G (G only), Section 26. (If in Zone 1 or 2).

6.2 AIRFRAME / AIRCRAFT MAINTENANCE, MODIFICATION, OVERHAUL, REPAIR, STC &/OR RTS

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA069	Prototype Parts SNC Approves	For this Purchase Order, Supplier must allow SNC and the FAA to inspect its Quality System, facilities, technical data, inspection records, and any manufactured articles, including witnessing any tests, including inspections or tests conducted at Supplier's facility, in support of FAA Conformity Inspection per 14 CFR Part 21.33. If FAA Conformity Inspection is to be completed at the supplier's location, items a-g, below, must be provided to the FAA or its Designee, but only an FAA 8130-3, Authorized Release Certificate, issued by the FAA or its Designee is	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.

		<p>required to be submitted to SNC. If FAA Conformity Inspection is to be completed at SNC, then Supplier must provide all of the following, as applicable, with delivery to the requirements of this Purchase Order to SNC to support SNC’s FAA Conformity Inspection.</p> <ul style="list-style-type: none"> a. Supplier First Article Inspection Record b. Traceability to FAA Witnessed Certification Flammability Test and FAA Approved Flammability Test Report (Per drawing or Test Plan) c. Material Certification for raw material(s) used in the production that are traceable to the part(s) being shipped to SNC d. Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other part(s) used in production of the part(s) being shipped to SNC e. Process certifications (as applicable) for outsourced special processes that are traceable to the part(s) being shipped to SNC f. Evidence of SNC disposition of all nonconformances and/or deviations from design data, supported by a documented acceptance from SNC, that are incorporated into the part(s) being shipped to SNC g. FAA Form 8130-9, Statement of Conformity, attached to Supplier 8130-9 Agent Letter, if SNC delegates the signing of the 8130-9 to the Supplier h. Compliance with any additional Quality Codes applied to the Purchase Order 	
QA070	<p>Prototype Aircraft Modification SNC Approves</p>	<p>For this Purchase Order, Contracted Maintenance must be coordinated with SNC’s Repair Station Chief Inspector or Accountable Manager. Supplier must be on the SNC’s Repair Station approved Contracted Maintenance Provider list and the maintenance function(s) that the supplier will perform must be listed on the SNC Repair Station FAA-Approved Contracted Maintenance Functions list. Supplier must allow SNC and the FAA to inspect its Quality System, facilities, technical data, inspection records, and any manufactured articles, and witness any tests, including inspections or tests conducted at Supplier’s facility in support of FAA Conformity Inspection per 14 CFR Part 21.33. Supplier must provide documented evidence that the Aircraft is in a condition for safe operation as part of the required paperwork to satisfy the requirements of the Purchase Order accompanied with a maintenance / modification record documenting and describing the work performed, per 14 CFR Part 43, clearly identifying the Aircraft prototype configuration and noting that the prototype modification is not approved for Return to Service (RTS), but was inspected and found to be in a condition for safe operation. All required copies of the following Documented Evidence may be in draft</p>	<p>SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.</p>

		<p>version if they are pending FAA Approval. Documented Evidence may include one or more of the following items, as applicable.</p> <ul style="list-style-type: none"> a. Maintenance Records describing the work performed b. Supplier First Article Inspection c. Traceability to FAA Witnessed Certification Flammability test and FAA Approved Flammability Test Report for installed parts (per drawing or Test Plan) d. Material Certification for raw material(s) used in the production that are traceable to the part(s) being shipped to SNC e. Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other part(s) used in production of the part(s) being shipped to SNC f. Process certifications (as applicable) for outsourced special processes that are traceable to the part(s) being shipped to SNC g. Evidence of SNC disposition of all nonconformances and/or deviations from design data, supported by a documented acceptance from SNC, that are incorporated into the part(s) being shipped to SNC h. FAA Form 8130-9, Statement of Conformity, attached to the Supplier 8130-9 Agent Letter, if SNC delegates the signing of the 8130-9 to the Supplier i. Compliance with any additional Quality Codes applied to the Purchase Order. The additional Quality Codes apply to parts and materials that are consumed by the aircraft modification. 	
QA071	Production Parts SNC Approves	<p>For this Purchase Order, Supplier must allow SNC and the FAA to inspect its Quality System, facilities, technical data, inspection records, and any manufactured articles, including witnessing any tests, including inspections or tests conducted at Supplier’s facility, in support of Purchase Order fulfillment for SNC (Reference requirements of 14 CFR Part 21.310). In addition, Supplier must provide all of the following, as applicable, to Support FAA Parts Manufacturer Approval (PMA) at SNC.</p> <ul style="list-style-type: none"> a. Supplier Inspection Records demonstrating conformity to current FAA-approved design that are traceable to the part(s) being shipped to SNC b. Evidence of, and traceability to, passing Production Flammability Test (Per drawing or Test Plan). Note: FAA witnessing and approval are not required 	<p>SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.</p>

		<ul style="list-style-type: none"> c. Material Certification for raw materials used in production that are traceable to the parts being shipped to SNC d. Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other parts used in production of the parts being shipped to SNC e. Process certifications (as applicable) for outsourced special processes that are traceable to the parts being shipped to SNC f. Evidence of SNC disposition <p>QUAL-REFN-002</p> <ul style="list-style-type: none"> g. of all nonconformances and/or deviations from design data, supported by a documented acceptance from SNC, that are incorporated into the parts being shipped to SNC h. Compliance with any additional Quality Codes applied to the Purchase Order 	
QA072	Production Parts Supplier Approves	<p>For this Purchase Order, Supplier must provide Documented Evidence of FAA approval or acceptance of the parts shipped to SNC. Supplier is responsible to determine the appropriate evidence of FAA Approvals (Reference FAA AC 20-62). SNC will verify compliance. One or more of the following are required, as applicable based on the items ordered on the SNC Purchase Order, to demonstrate evidenced of FAA Parts Approval / Acceptance.</p> <ul style="list-style-type: none"> a. FAA Form 8130-3, Authorized Release Certificate / Airworthiness Approval Tag from an FAA Production Approval Holder (PAH), signed in Block 13b (not Block 14b), with the “Approved design data...” box checked in Block 13a b. FAA Technical Standard Order (TSO) Markings (TSO Parts Only) c. FAA Parts Manufacturer Approval (PMA) Markings (PMA Parts Only) d. FAA Production Certificate (PC) Holder Documents / Markings e. Non-United States / Foreign Production Approval Holder (PAH) equivalent of FAA Form 8130-3, Authorized Release Certificate / Airworthiness Approval Tag, issued for export per Bilateral Airworthiness Agreement (BAA). No counterfeit tags from Suppliers are permitted. f. Standard Parts are required to be manufactured per industry / government standards (e.g. – AN, MS, NAS, SAE, etc standards) 	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.
QA073	Component Maintenance SNC Approves	For this Purchase Order for Contracted Maintenance, the Contracted Maintenance must be coordinated with SNC’s Repair Station Chief	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC

	(Supplier is a FAA Certificated 14 CFR Part 145 Repair Station)	<p>Inspector or Accountable Manager. Supplier must be on the Repair Station's approved Contracted Maintenance Provider list and the maintenance function(s) that the supplier will perform must be listed on the SNC Repair Station's FAA-Approved Contracted Maintenance Functions list.</p> <p>Supplier must provide Documented Evidence of the following to support FAA Approval for Return to Service (RTS) by SNC.</p> <ol style="list-style-type: none"> a. Supplier Work and Inspection Records describing the work performed and demonstrating conformity to current design and tech data b. Material Certification for raw materials used in production that are traceable to the parts being shipped to SNC c. Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other parts used in production, repair, and/or modification of the parts being shipped to SNC d. Process certifications (as applicable) for outsourced special processes that are traceable to the parts being shipped to SNC e. Evidence of SNC Repair Station disposition of all nonconformances and/or deviations from design and technical data, supported by a documented acceptance from SNC, that are incorporated into the parts being shipped to SNC f. Compliance with any additional Quality Codes applied to the Purchase Order. The additional Quality Codes apply to parts and materials that are consumed during aircraft maintenance. 	with shipment all of the relevant documentation defined in the Code Description.
QA073a	Component Maintenance SNC Approves (Supplier is NOT a FAA Certificated 14 CFR Part 145 Repair Station)	<p>For this Purchase Order for Contracted Maintenance, which is placed with a non-FAA Certificated 14 CFR Part 145 Repair Station Supplier, the Contracted Maintenance must be coordinated with SNC's Repair Station Chief Inspector or Accountable Manager and Supplier must be on the Repair Station's approved Contracted Maintenance Provider list with the maintenance function(s) that the supplier will perform listed on the SNC Repair Station's FAA-Approved Contracted Maintenance Functions list. In addition, SNC's Repair Station must approve the supplier's Quality System prior to beginning work, supervise the work, and retain direct control of the Supplier's Component Maintenance. Supplier must also allow SNC and the FAA to inspect its Quality System, facilities, technical data, inspection records, and any manufactured articles, including witness any tests, including inspections or tests conducted at Supplier's facility, in support of Purchase Order fulfillment for SNC, per 14 CFR Part 145.223.</p>	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.

		<p>Supplier must provide Documented Evidence of the following to support FAA Approval for Return to Service (RTS) by SNC.</p> <ol style="list-style-type: none"> Supplier Work and Inspection Records demonstrating conformity to current design and tech data Material Certification for raw materials used in production that are traceable to the parts being shipped to SNC Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other parts used in production, repair, and/or modification of the parts being shipped to SNC Process certifications (as applicable) for outsourced special processes that are traceable to the parts being shipped to SNC Evidence of SNC Repair Station disposition of all nonconformances and/or deviations from design and technical data, supported by a documented acceptance from SNC, that are incorporated into the parts being shipped to SNC Compliance with any additional Quality Codes applied to the Purchase Order. The additional Quality Codes apply to parts and materials that are consumed during aircraft maintenance. 	
QA074	Component Maintenance Supplier Approves (FAA Approved Parts Received from Supplier)	<p>For this Purchase Order for Outsourced Maintenance, Supplier must provide Documented Evidence of FAA Approval for Return to Service (RTS) of the components being shipped to SNC. Documented Evidence may include one or more of the following items.</p> <ol style="list-style-type: none"> FAA Form 8130-3, Authorized Release Certificate / Airworthiness Approval Tag, signed in Block 14b (not Block 13b) Maintenance Release meeting the requirements of 14 CFR Part 43 Non-United States / Foreign Maintenance Approval Holder equivalent of the FAA Form 8130-3, Authorized Release Certificate / Airworthiness Tag (e.g. – EASA Form 1), issued for export per Bilateral Airworthiness Agreement (BAA). No counterfeit tags from Suppliers are permitted. 	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.
QA075	Aircraft Maintenance SNC Approves (Supplier IS a FAA Certificated 14 CFR Part 145 Repair Station)	<p>For this Purchase Order, Contracted Maintenance must be coordinated with SNC's Repair Station Chief Inspector or Accountable Manager. Supplier must be on the Repair Station's approved Contracted Maintenance Provider list and the maintenance function(s) that the supplier will perform must be on the SNC Repair Station's FAA-Approved Contracted Maintenance Functions list. Supplier must provide Documented Evidence of the following to support FAA Approval for Return to Service (RTS) by SNC.</p>	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.

		<ul style="list-style-type: none"> a. Supplier Work and Inspection Records describing the work performed and demonstrating conformity to current design and tech data b. Material Certification for raw materials used in production that are traceable to the parts being shipped to SNC c. Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other parts used in production, repair, and/or modification of the parts being shipped to SNC d. Process certifications (as applicable) for outsourced special processes that are traceable to the parts being shipped to SNC e. Evidence of SNC Repair Station disposition of all nonconformances and/or deviations from design and technical data, supported by a documented acceptance from SNC, that are incorporated into the parts being shipped to SNC f. Compliance with any additional Quality Codes applied to the Purchase Order. The additional Quality Codes apply to parts and materials that are consumed during aircraft maintenance. 	
QA075a	Aircraft Maintenance SNC Approves (Supplier is NOT a FAA Certified 14 CFR Part 145 Repair Station)	<p>For this Purchase Order for Contracted Maintenance, which is placed with a non-FAA Certificated 14 CFR Part 145 Repair Station Supplier, the Contracted Maintenance must be coordinated with SNC's Repair Station Chief Inspector or Accountable Manager and Supplier must be on the Repair Station's approved Contracted Maintenance Provider list with the maintenance function(s) that the supplier will perform listed on the SNC Repair Station's FAA-Approved Contracted Maintenance Functions list. In addition, SNC's Repair Station must approve the supplier's Quality System prior to beginning work, supervise the work, and retain direct control of the Supplier's Aircraft Maintenance. Supplier must also allow SNC and the FAA to inspect its Quality System, facilities, technical data, inspection records, and any manufactured articles, including witnessing any tests, including inspections or tests conducted at Supplier's facility, in support of Purchase Order fulfillment for SNC, per 14 CFR part 145.223. Supplier must provide Documented Evidence of the following to support FAA Approval for Return to Service (RTS) by SNC.</p> <ul style="list-style-type: none"> a. Supplier Work and Inspection Records describing the work performed and demonstrating conformity to current design and tech data b. Material Certification for raw materials used in production that are traceable to the parts being shipped to SNC 	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.

		<ul style="list-style-type: none"> c. Seller shall verify and provide all documents that provide chain of custody to the original manufacturer for other parts used in production, repair, and/or modification of the parts being shipped to SNC d. Process Certifications (as applicable) for outsourced special processes that are traceable to the parts being shipped to SNC e. Evidence of SNC Repair Station disposition of all nonconformances and/or deviations from design and technical data, supported by a documented acceptance from SNC, that are incorporated into the parts being shipped to SNC f. Compliance with any additional Quality Codes applied to the Purchase Order. The additional Quality Codes apply to parts and materials that are consumed during aircraft maintenance. 	
QA076	Aircraft Maintenance Supplier Approves (FAA Approval Received from Supplier)	<p>For this Purchase Order, Supplier must provide Documented Evidence of FAA Approval for Return to Service (RTS) for all Aircraft delivered to SNC. SNC's acceptance of Supplier's Aircraft Maintenance may be subject to SNC Ground Test or Aircraft Acceptance Flight. All of the following are required, as applicable, to be submitted to SNC to demonstrate compliance and conformity, and to facilitate operation and continued airworthiness for the Aircraft.</p> <ul style="list-style-type: none"> a. Maintenance Records for work performed compliant with 14 CFR Part 43 b. FAA Form 337, Major Repair & Alteration (Airframe, Power plant, Propeller, or Appliance), for major repairs and/or major alterations c. FAA Form 8130-3, Authorized Release Certificate / Airworthiness Approval Tag, or other evidence of FAA Approval / Acceptance for all new time-controlled or serialized component maintenance that the Supplier has installed on the Aircraft d. FAA Form 8130-3, Authorized Release Certificate / Airworthiness Approval Tag, or other 14 CFR Part 43 Maintenance Release documentation for all maintenance completed on components that the Supplier has installed e. Copies of FAA Approval for Data Used (e.g. – STC, FAA Form 8110-3, FAA Form 8100-9, FAA Field Approval, etc) f. Supplemental Type Certificate (STC) Permission Letter compliant with 14 CFR Part 91.403(d) 	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.

		<p>g. Copies of FAA-Approved Master Drawing List (MDL), Airplane Flight Manual Supplement (AFMS), and Instructions for Continued Airworthiness (ICA)</p> <p>h. Copies of revised Aircraft Weight and Balance and Equipment list</p>	
QA077	Part / Assembly Returned for Repair	For this Purchase Order for Repair of a Part / Assembly, Supplier must provide to SNC with the returned part Documented Evidence of all tests performed and/or actual dimensions and/or results completed during Supplier Final Acceptance to demonstrate that the repaired part / assembly has been put into a functional suitable condition conforming to requirements. A Certificate of Conformance must be provided from the Supplier documenting all work that was performed to put the part / assembly into a functional suitable condition conforming to requirements and shall have the Supplier's Name, printed / typed name of the supplier's authorized representative certifying the shipment, their title, signature (electronic is acceptable) or stamp, and date.	SNC requires Suppliers to comply with and satisfy each element of this Quality Code, as defined, and submit to SNC with shipment all of the relevant documentation defined in the Code Description.

7 SPACE SYSTEMS PARTS AND SERVICES SUPPLIER QUALITY FLOW DOWN REQUIREMENTS

This section contains Supplier Quality Requirements that may be applied for POs placed for SNC's Space Systems Group for Parts and/or Services.

<u>Code Number</u>	<u>Code Title</u>	<u>Code Description</u>	<u>Action Required and/or Expected Supplier Deliverable(s)</u>
QA002H	Proof Load Testing and Acceptance	The Supplier shall submit with each shipment a Certificate of Conformance (C of C), signed by an authorized supplier's representative, indicating that the delivered End Item (EI) has passed any/all required Proofload Testing and/or Acceptance Test Procedure(s) (ATPs). The CofC shall be accompanied with a copy of the completed Supplier's Test procedure, and shall contain the following: Purchase Order Number, applicable drawing(s) and/or specifications, including revision levels, the Serial Number of the EI (if applicable) and the pass/fail criteria utilized for acceptance.	SNC requires Suppliers to provide a Certificate of Conformance signed (manually or electronically) by a member of Supplier's management that is accountable for all items meeting SNC's requirements indicating that all items in the shipment meet SNC's requirements for Proofload Testing and/or Acceptance Test Procedure(s). The signed Certificated of Conformance must be sent with a copy of the Supplier's Test Procedure attached and list the following items for each item shipped to SNC where code QA002H is applied: Purchase Order Number, Applicable drawing(s) and/or specification for the End Item (EI), including revision levels, the Serial Number of the EI (if applicable), and the pass/fail criteria utilized for acceptance.
QA013D	Raw Material Test Specimens	Items delivered under this order shall be accompanied by raw material test specimens. Specimens shall be submitted with the initial shipment from each lot or processing batch of items to be delivered under this order.	SNC requires Suppliers to provide raw material test specimens with the initial shipment from each supplier

			manufactured lot or processing batch of items to be delivered that satisfy SNC PO line item requirements.
QA013H	Silicone Processing	All silicone processing, including the use of curing ovens, tools, equipment, fixtures, the supplies, and garments used in the operations, shall be segregated from other polymeric material operations to preclude contamination of assemblies, tools, workspaces, and equipment not intended for use with silicone materials. WARNING: FLIGHT EQUIPMENT CAN BE CONTAMINATED WHEN TOOLS AND EQUIPMENT USED FOR SILICONE PROCESSING ARE NOT RIGOROUSLY SEGREGATED FROM THOSE NOT USED FOR SILICONE PROCESSING.	SNC requires Suppliers fulfilling the designated PO line items to acknowledge in writing to SNC at PO acknowledgement and acceptance that Supplier guarantees that all manufacturing equipment, work areas, including personnel personal protective equipment (PPE), for processing of silicone products, is segregated from all non-silicone product processing.
QA016C	Red Plague Mitigation	Supplier shall take measures to prevent red plague on silver-coated copper wire. At least one of the following should be taken as a precautionary measure: material to be shipped in water/vapor-proof packaging; ends are to be capped to prevent moisture penetration; activated desiccants and humidity indicator cards are recommended. Material having a manufacturing date code in excess of 10 years cannot be provided as part of this order.	SNC requires Suppliers to communicate in writing to SNC at the time of PO acknowledgement and acceptance that Supplier guarantees that the product(s) that contain silver-coated copper wire, Cable, and Harness Assemblies have been adequately protected to prevent cuprous / cupric oxide corrosion (red plague) and the manufacturing date of the material has been <10 years from the shipment date.
QA034	Critical to Safety Item	See attached control plan	SNC requires Supplier to adhere to the requirements of the Control Plan submitted with the Purchase Order Line Items, as indicated, for the Critical to Safety Parts.
QA037A	Cross Reference Matrix	A cross reference matrix shall be completed by supplier verifying the history, lot number, batch number, secondary process document number, etc. for each sub-component within the delivered item per SSGD91882.	SNC requires that Suppliers complete and submit to SNC with shipment a cross reference matrix to verify the history, lot number, batch number, secondary process document number, etc. for each sub-component within the delivered item, per SNC SSGD91882, Traceability Cross Reference Matrix.
QA040	Prohibited Materials for Spaceflight	All products supplied on this purchase order shall be free of platings, coatings, and claddings composed of pure tin, solders with greater than 97% tin, cadmium, selenium, brass, or zinc. The Seller shall certify that these prohibited materials were not used in the platings, coatings, or claddings used in the construction of products procured on this purchase order. Compliance to this restriction is subject to SNC review at any time during the performance of this order.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Conformance indicating that all products supplied to the relevant Purchase Order line items are free of platings, coatings, and claddings composed of pure tin and/or solders with >97% tin, cadmium, selenium, brass, or zinc.
QA040A	Tin Mitigation	The use of tin based finishes and solder with lead concentrations less than 3 percent, either external or internal to an EEE part, is restricted from use. 1. When the restricted finish or solder is used internal to the part, NSPAR review and approval by the EEE Technical panel is required prior to introduction of the part into the design. Implementation of the mitigations for lead-free tin defined in GEIA-STD-0005-2 for control level 2C will be used for consideration of the part. 2. When the restricted finish or solder is used external to the part (such as on the leads, case, or housing) then a Material Usage Agreement (MUA) approving the methods used for tin mitigation must be submitted in accordance with	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Conformance indicating that all products supplied to the relevant Purchase Order line items do not contain tin based finishes and/or solder with lead concentrations of <3%. If the tin based finish and/or solder has >3% lead concentration, refer to and indicate compliance with the relevant requirement(s) defined in SNC Quality Code 40A, items 1 and/or 2a, 2b, and/or 2c.

		SSGD99474, Materials and Processes Selection, Control, and Implementation Plan. Possible mitigations to be used may include: a. For parts whose lead finish is restricted, solder dip the exposed tin finish in accordance with GEIA-STD-0006, Requirements for Using Solder Dip to Replace the Finish on Electronic Piece Parts. b. If the solder dip process is not practical, the risk can be mitigated in accordance with IPC J-STD-001ES, Space Applications Electronic Hardware Addendum to IPC J-STD-001E, Requirements for Soldered Electrical and Electronic Assemblies, Clause 0.1.6, Use of Lead-Free Tin. c. Implementation of the mitigations defined in GEIA-STD-0005-2 for Control Level 2C can be considered.	
QA041	Goddard Space Flight Center (GSFC) Screened Hardware for Spaceflight	Fasteners shall meet the requirements of GSFC document 541-PG-8072.1.2A Table 2.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Conformance indicating that all products supplied to the relevant Purchase Order line items meet the requirements of GSFC document 541-PG-8072.1.2A Table 2.
QA042	Titanium Material Sourcing	Supplier shall contact the SNC Buyer for approval prior to sourcing material used in manufacturing of parts/components on this order. Distributors and original mill will be identified and communicated to the SNC buyer.	SNC requires Suppliers to contact the SNC Buyer for documented approval prior to sourcing titanium material intended for use in the manufacturing of parts / components to satisfy SNC Purchase Order line item requirements.
QA057	Tin Mitigation Certificate of Conformance	Seller shall submit a Tin-Lead plating verification and sampling plan in accordance with Code 20v for review and approval by SNC. A certificate of compliance statement included on the product Certificate of Conformance with each shipment of product is adequate to indicate each sub-tier seller's product(s) contained therein, meet the lead content and test requirements of the plan.	SNC requires that Suppliers complete and submit to SNC with shipment a Tin-Lead plating verification and sampling plan in accordance with the relevant and latest revision of IPC J-STD requirements (reference SNC Quality Code 20V, Section 5.4 of this document) accompanied by a Certificate of Compliance statement on the electronic Certificate of Conformance indicating that this requirement has been met.
QA057A	Tin Whiskers - GEIA-STD-0005-2 Standard Applies	Standard for Mitigating the Effects of Tin Whiskers in Aerospace and High Performance Electronics, level 2C applies.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Compliance on the electronic Certificate of Conformance that product shipped to satisfy Purchase Order line item requirements meet Level 2C requirements in GEIA-STD-0005-2 current revision.
QA059	Thermal Protection System Parts	The supplier shall comply with the requirements of SSGD103466 for procurement, fabrication, test and delivery of Thermal Protection System parts and assemblies	SNC requires that Suppliers acknowledge agreement and ability to meet all requirements of SNC SSGD103466, Subcontracts Mission Assurance Requirements Document (SMARD) CRS2 Thermal Protection System at the time of Purchase Order acknowledgement. Upon shipment of products to satisfy Purchase Order Requirements, Supplier is required to complete and submit to SNC with shipment a

			Certificate of Compliance indicating that all requirements have been evaluated and met.
QA060A	NASA-STD-6008 - Fracture Critical Classification, Screened Fasteners for Spaceflight	Fasteners shall be procured, tested and inspected in accordance with the requirements specified in NASA-STD-6008 document Tables 1 & 2 for Fracture Critical classified fasteners, nuts and inserts. Hardware shall be purchased from Approved Manufacturers per NASA-STD-6008, Section 4.2, and require complete traceability per NASA-STD-6008, Section 4.6.1. Hardware shall receive 100% visual and 100% dimensional inspection per NASA-STD-6008, Sections 4.11.3 & 4.11.5. Hardware shall be eddy current inspected or proof tested per NASA-STD-5019 4.1.2.3.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Compliance indicating that fasteners and hardware procured for use in fulfilling SNC Purchase Order line item requirements have been procured, tested, and inspected in accordance with the requirements specified in NASA-STD-6008 and SNC Quality Code 60A.
QA060B	NASA-STD-6008 – Low Risk Fracture Classification, Screened Fasteners For Spaceflight	Fasteners shall be procured, tested and inspected in accordance with the requirements specified in NASA-STD-6008 document Tables 1 & 2 for Low Risk Fracture classified fasteners, nuts and inserts. Hardware shall be purchased from Approved Manufacturers per NASA-STD-6008, Section 4.2, and require partial traceability per NASA-STD-6008, Section 4.6.2. Hardware shall receive BOTH tensile testing and chemical analysis per NASA-STD-6008, Sections 4.11.4.2 & 4.11.6. If the hardware has complete traceability per NASA-STD-6008, Section 4.6.1, tensile testing and chemical analysis may be omitted. Hardware shall receive 100% visual and 100% dimensional inspection per NASA-STD-6008, Sections 4.11.3 & 4.11.5.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Compliance indicating that fasteners and hardware procured for use in fulfilling SNC Purchase Order line item requirements have been procured, tested, and inspected in accordance with the requirements specified in NASA-STD-6008 and SNC Quality Code 60B.
QA060C	NASA-STD-6008 – Fail Safe Classification, Screened Fasteners For Spaceflight	Fasteners shall be procured, tested and inspected in accordance with the requirements specified in NASA-STD-6008 document Tables 1 & 2 for Fail Safe classified fasteners, nuts and inserts. Hardware shall have partial traceability per NASA-STD-6008, Section 4.6.2. Hardware shall receive BOTH tensile testing and chemical analysis per NASA-STD-6008, Sections 4.11.4.2 & 4.11.6. If the hardware has complete traceability per NASA-STD-6008, Section 4.6.1, tensile testing and chemical analysis may be omitted. Hardware shall receive 100% visual and dimensional inspection (sampling basis) per NASA-STD-6008, Sections 4.11.3 & 4.11.5.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Compliance indicating that fasteners and hardware procured for use in fulfilling SNC Purchase Order line item requirements have been procured, tested, and inspected in accordance with the requirements specified in NASA-STD-6008 and SNC Quality Code 60C.
QA060F	NASM1312-11 Fastener Fatigue Testing	Tension fatigue testing shall be completed per fastener procurement specification, regardless of fastener types excluded from testing in the specification. Test setup shall conform to NASM1312-11. A report of test setup, test load, number of cycles, and acceptance criteria shall be provided.	SNC requires that Suppliers complete and submit to SNC with shipment a Certificate of Compliance to SNC Quality Code 60F and a test report for tension fatigue testing that includes test setup, test load, number of cycles, test results, and acceptance criteria.
QA061	ASTM E595 – Standard Test Method for Total Mass Loss and Collected Volatile Condensable	Supplier shall provide with each shipment a report of ASTM E595 test results. Each test report must be traceable to each delivered material batch/lot.	SNC requires that Suppliers complete and submit to SNC with shipment a test report for Mass Loss testing that includes the test results that are traceable to each material batch / lot.

	Materials from Outgassing in a Vacuum Environment		
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8 GLOSSARY OF TERMS/ACRONYMS

Acronym, Abbreviation or Term	Definition	Term Source (SNC, Military/Government, or Industry)
Certificate of Conformance (CoC)	A document certified by a competent (individual with both technical and process knowledge; typically a member of management responsible for goods and services meeting all requirements of the part and/or service and may be the manufacturer or an independent laboratory) authority verifying the fact that the provided goods or service fulfills the required standards and specifications, but does not usually include particular test conditions, test specifications, test parameters, and final outcomes..	Industry
EASA	European Union Aviation Safety Agency	Government
FAA	Federal Aviation Administration	Government
JAA	Joint Aviation Authority	Government
RTS	Return to Service	Government / FAA
STC	Supplemental Type Certificate	Government / FAA
SNC BA	Refers to Sierra Nevada Corporation's Business Areas inclusive of Electronic & Information Systems (EIS), Integrated Mission Systems (IMS), ISR, Aviation & Security (IAS), and Space Systems Group (SSG)	SNC