Supplier Quality Requirements

General Requirements *(Pages 1-5) are applicable to all Purchase Orders)*

The Supplier Quality Requirements and specific Quality Codes, with all of their terms and conditions, become an integral part of PacSci EMC Purchase Orders, in conjunction with PacSci EMC Terms and Conditions (Form #1548). Where applicable, these requirements are to be flowed down to the supplier's sub-tier suppliers.

Any deviations or modifications to existing Purchase Orders are to be transmitted through PacSci EMC *purchasing and will require a Change Order*. Verbal or otherwise unofficial instruction to deviate from the Purchase Order is not allowed. Only a legible facsimile copy (fax) or electronic transmittal of the Change Order issued by PacSci EMC purchasing is considered adequate authority to proceed.

Quality System Requirements

The Supplier shall maintain a Quality System in conformance with the requirements of ISO 9001, AS9003 or AS9100. Suppliers identified by Pacific Scientific-Energetic Materials Company as "Critical", shall be ISO 9001 or AS9100 certified or be able to successfully demonstrate compliance via an on-site assessment performed by PacSci EMC Supplier Development Engineering.

Calibration System Requirements

The Supplier shall meet and maintain a calibration system in conformance with the Calibration System Requirements of ISO 10012:2003, ANS/ISO/IEC 17025:2005 and ANSI/NCSL Z540.3-2006.

Inspection System Requirements

Parts on this purchase order shall be manufactured with an inspection system that conforms to the requirements of ISO 9001 or AS9100.

Design Review Requirements

Items on this purchase order may require supplier support of a detailed Design Review Meeting utilizing PacSci EMC Form# 1745. Contact the PacSci EMC buyer to determine applicability.

Supplier Performance

Pacific Scientific-Energetic Materials Company (PacSci EMC) will evaluate suppliers based on the quality of their product, delivery to schedule, survey results, documentation errors, and timeliness of responses to requests for corrective action. A history of substandard ratings may be cause for removal of the supplier from the PacSci EMC Approved Vendor List (AVL). The objective of PacSci EMC is to receive defect-free parts and complete, error-free documentation, on or before scheduled delivery dates.

Nonconforming Material, MRB, Variances and Requests for Deviation

The supplier shall maintain a system of material identification and segregation to ensure that non-conforming material is not intermingled with accepted material. ***The supplier is not authorized to perform material review board (MRB) actions or disposition of non-conforming material with the intent of delivering such material without the express written authorization of*** PacSci EMC ***purchasing.*** Recommended dispositions or departures from drawings or specifications (Repair or use As-Is) must be forwarded to PacSci EMC for approval. The use of the PacSci EMC Vendor Information Request (VIR) form is the preferred method to transmit such requests and is located on the PacSci EMC website. The PacSci EMC Buyer must approve any departures from purchase order requirements.

Previous dispositions shall not be considered precedence for acceptability. PacSci EMC may request supplier to submit cause and corrective action on discrepancies related to an order. Any material rejected by PacSci EMC and resubmitted by supplier, shall be identified as re-submitted material and must reference the PacSci EMC original rejection document and detail all actions taken to correct and prevent recurrence of the discrepancy.

The Supplier and any sub-tier contractor shall provide Notification of Escapement within 24 hours of discovery of a suspect nonconforming material escape. Notification shall be communicated to the **PacSci EMC** ***Buyer.***

Corrective Action Requests

The supplier or the supplier's sub-tier suppliers shall respond to PacSci EMC requests for corrective action within the timeframe specified and take timely and effective action to eliminate and prevent the root-cause underlying deficiencies.

Right of Access - Surveillance

The supplier shall furnish reasonable support and access to manufacturing facilities, quality system documentation, quality records, third-party audit reports, and personnel responsible for implementing and maintaining the quality system. (Reference PacSci EMC General Terms & Conditions Form #1548, pg.10, DFARS Clause 252.223-7002).

PacSci EMC may periodically perform on-site audits of the supplier's quality system and related processes. The frequency and extent of these audits depends on the supplier's applicable current certification status, the performance history of the supplier, and the criticality of the supplier's service or product to PacSci EMC or its customers.

Records Retention

Unless otherwise specified in the PO, Statement of Work, or as defined by the applicable PacSci EMC SQC, records must be maintained for a period of 7 years and must be retrievable within 48 hours of a request by PacSci EMC. Note: Supplier is to notify PacSci EMC before disposing of these records regardless of specified retention time.

Material Traceability

For all parts, materials, and assemblies with traceability identification such as serial numbers, lot numbers, batch numbers, and date codes, the supplier shall maintain the traceability data from procurement through fabrication, assembly, test and delivery. The traceability data shall provide for the ready identification of suspect lots when individual items are found discrepant. Multiple lot/batch/date codes of detail items may be kitted for a range of component builds provided the supplier maintains applicable records that identify which lot/batch/date codes are in a single traceable component (preferred) or in a limited range of traceable component builds.

Supplier Documentation Control

The Supplier shall have a process to ensure that relevant versions of applicable documents furnished by PacSci EMC (as well as those specified of external origin) are available at points of use. The supplier shall provide all required documentation with each shipment that is legible and complete. Whenever PacSci EMC forms are utilized, suppliers are to use only the current revision forms found on the PacSci EMC website (or provided by PacSci EMC at the time of use) and not retain hardcopies of forms or other documents that may become outdated. ***Corrections or additions made to any documents provided to*** PacSci EMC ***will require a single line-through the error with the correction next to it, along with the initials of the authorized individual and date it was corrected***. The use of write-overs, pencil, whiteout, or correction tape is not allowed. Additions or notations on sub-tier documentation (such as PacSci EMC PO# added to sub-tier certs) are allowed if supplier includes initials (or stamp) and date of the authorized individual making the notation.

Notification of Changes

The Supplier shall notify PacSci EMC prior to any changes to the Suppliers or any sub-tier changes that affect purchase order requirements. A change is identified as any changes in company ownership, materials, configuration, process, sub-tier suppliers, inspection testing methods, techniques and/ or facility changes prior to the start of fabrication (notification is defined as a minimum of ninety (90) calendar days prior to change). Such changes or events may negate all previous PacSci EMC supplier qualifications, certifications, approval status, and may require re-qualification or re-submittal of a First Article. Supplier requests are to be submitted on PacSci EMC form #2030, Vendor Information Request (VIR), available on the web at psemc.com.

Counterfeit Parts Prevention

No supplier or distributor shall deliver (or use) any counterfeit parts or components to PacSci EMC. A “counterfeit” part is defined as: “A part falsely represented in some manner, e.g., manufacturer, date code, lot code, reliability level, markings, etc.” The term, “falsely represented” specifically includes any parts that have been reclaimed, previously used, or modified by other than a PacSci EMC -approved process.

The terms shown below are defined in Aerospace Standard SAE AS5553.

- Suspect Part
- Counterfeit Part
- Original Component Manufacturer (OCM)
- Original Equipment Manufacturer (OEM)
- Authorized Supplier

Requirements:

The supplier shall maintain a counterfeit prevention process internally and with its supplier using SAE AS5553 as a guide. The supplier shall immediately notify PacSci EMC with the appropriate information if the supplier becomes aware or suspects that items delivered in accordance with PacSci EMC purchase orders contain suspect or confirmed counterfeit parts.

The suppliers shall be the OEM/OCM or purchase material directly from the OEM, OCM, or authorized supplier. Original OEM/OCM traceability information (includes the chain of custody documents from original manufacturer through subsequent owners) shall be provided with the part shipment. The supplier is not authorized to deliver any material to PacSci EMC not procured from or manufactured by an OEM, OCM, or authorized supplier. Any departure from a specified OCM/OEM or an authorized supplier in the part documentation shall require the supplier to submit a Vendor Information Request (VIR) form #2030 for PacSci EMC approval prior to delivery. The supplier is not to deliver product until the VIR receives PacSci EMC and Customer signature approval and is submitted back to the supplier. The approved VIR form must accompany the shipment along with other specified certifications.

The supplier shall flow down the requirements of this SQC code to lower tier suppliers and ensure compliance.

Restrictions on Pure Tin or Lead Free Parts or Solder*

The use of "pure tin" on any delivered product is prohibited unless specifically authorized. Product changes or conversion of products due to the restrictions on the use of hazardous substances (Example: EU lead-free mandates), as well as associated process changes are prohibited without written approval from PacSci EMC. Pure tin solder or its usage on any product delivered to PacSci EMC is prohibited due to the possibility of the “tin whisker” effect that can occur over time, causing product failure.

*The definition of pure tin is >97% Sn (Tin) or <3% Pb (Lead). Must have at least 3% lead.

Preservation and Packaging, FOD and ESD control

Preservation, packaging and packing of all deliverable goods shall be in accordance with the latest revision of ATSM D3951, standard practice for commercial packaging, unless other requirements are specifically specified in this order. All parts and materials intended for PacSci EMC shall be protected against the potential damage from shipping, ESD (Electrostatic Discharge), FOD (Foreign Object Debris), corrosion, moisture, contamination, deterioration or damage by processing, handling, storage at the Seller, or in transit to PacSci EMC or from any sub-tier supplier.

Obsolescence Management/End of Life (EOL):

Supplier shall perform obsolescence/EOL analysis of the Bill of Material (BOM). The Bill of Materials is a listing of the raw materials, sub-assemblies, intermediate assemblies, sub-components, parts and quantities of each needed to manufacture the end product.

Obsolescence is defined as the loss or impending loss of parts or suppliers of parts or raw materials. The BOM should be categorized based on:

- Known Obsolescence/EOL – material(s) and/or component(s) are no longer in production by the manufacturer.
- Potential Obsolescence/EOL concern - material(s) and/or component(s) are nearing the end of their life cycle. Manufacturer has plans to discontinue the material(s) and/or component(s) within the next 12 months, as a minimum and/or up to as much as 4 years.
- Small or no Obsolescence/EOL concern – verified by the material(s) and/or component(s) manufacturer(s) that the material(s) and/or component(s) will be available for the next 12 months at a minimum.

Method for analysis is at the supplier's discretion, if required PacSci EMC will help support review of affected material(s) and/or component(s). Analysis shall be performed within the first 60 days of the execution of this purchase order or no more than 12 months from the previous analysis. Any new items added to the BOM shall require analysis. Supplier shall provide written notice, identification of impact and possible recommendations, within 10 days of obsolescence identification.

PacSci EMC resolution of obsolescence/EOL issues may include: (i) one-time purchase of EOL material(s) and/or component(s), (ii) the qualification of an alternate supplier, material(s) and/or component(s), or (iii) a redesign of the affected component(s).

Industry Standards and Revisions:

Unless otherwise specified (e.g. drawing, specification, etc.) the valid revision of any industry standard (e.g. ASTM, AMS, MIL-STD, etc.) at the time of PO issuance shall be used for fulfilment of the purchase order. Any deviations from this requirement shall require the supplier to submit a Vendor Information Request (VIR) form #2030 for PacSci EMC approval prior to delivery.

Shelf Life and Storage Requirements:

Suppliers, Distributors, and or Manufacturers that deliver material to PacSci EMC with chemical or material compounds that have shelf life or special storage conditions other than ambient temperature, must submit shelf life and/or storage conditions on their certifications. Such materials may include, but not inclusive to, adhesive backed labels, tags, disks, any solder material that has flux, etc.

The certification(s) must include the date of manufacture, length of shelf life and or expiration date, and/or any special storage information. Note: Any specific SQC Code affixed to the purchase order will take precedence over this General Requirement.

PacSci EMC SUPPLIER QUALITY CODES *SQC's*

SQC 04 – Removed added to General Requirements

SQC 06 – Source Inspection and/or Customer Verification of Subcontracted Product

PacSci EMC or PacSci EMC customer representative are required to perform or witness manufacturing, inspection or testing of product/services at the Supplier's facility or your sub-tier processor, as delegated prior to each shipment. PacSci EMC reserves the right to conduct (or waive) surveillance of work-in-progress, inspection and/or test at points selected by PacSci EMC quality. Waivers shall not relieve the Supplier's requirement to fully comply with the specifications and all of the terms and conditions of the Contract/Purchase Order.

The Supplier shall furnish reasonable access to relative contract, design and specification data, and the necessary equipment and space to perform any such inspections/tests.

SQC 07 – Government Source Inspection

Government inspection is required at your facility or your sub-tier processor, as delegated.
If you have a government/military representative you normally work with, provide them a copy of this purchase order.

If you don't have an onsite representative, or you don't know how to arrange for a representative, contact the PacSci EMC buyer for direction.

When Government Delegation is required for Supplier's Sub-tier suppliers, the Prime Contract Number and DPAS Rating shall be added to the purchase order. A copy of the purchase order shall be forwarded to PacSci EMC Purchasing.

PacSci EMC will be notified of any corrective actions/findings issued by the government as a result of the inspection within 3 days.

SQC 08 – Removed

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SQC09 – Removed

SQC 25A – Process Certifications

Suppliers and/or their sub-contractors performing any processes listed on the purchase order, referenced drawing, or specifications must provide separate certifications for each special process.

Each shipment shall be accompanied by one legible copy of a signed Supplier Certificate of Conformance (PacSci EMC Form DI-QA-506(HL)F01 or equivalent) that identifies the processes performed to specification, or sub-tier supplier certification, as applicable. Electronic signature or signed validation is acceptable unless otherwise specified by contract. ***The certificate shall include the following as a minimum:***

1. Supplier's name and address
2. PacSci EMC P.O. Number
3. Part number, including dash and rev. letter
4. Quantity
5. Lot number, batch numbers, or serial numbers, as applicable
6. Process name and specification number with type and class
7. Name and address of agency that performed the process, if other than the supplier.
8. Signature or stamp with the title of the supplier's authorized personnel signing the certificate.

NOTE: Sub tier supplier certs must reference supplier PO and info or PacSci EMC PO for traceability.

See General Requirements for retention requirements.

SQC25B – NADCAP Process Approval

This code requires the same information as SQC25A except the supplier shall be NADCAP approved. The CofC shall reflect NADCAP certification or a valid NADCAP certificate shall be included with shipment.

NADCAP (National Aerospace and Defense Contractors Accreditation Program).

SQC 26 – Certificate of Age/Environment Sensitive Material (50% Shelf Life)

Limited shelf life items must have a minimum of 50% of the rated shelf life (if shelf life is established) remaining at the time of receipt*, unless otherwise specified on the purchase order*. Shelf life begins on date of manufacture or cure. Each shipment shall be accompanied by one legible copy of an approved Supplier Certificate of Conformance (PacSci EMC form DI-QA-506(HL)F01 or the vendor's equivalent), which certifies that all requirements of the Purchase Order have been complied with, and ***will contain the following as a minimum:***

1. Supplier's name and address
2. PacSci EMC Purchase Order Number
3. Part number, dash & rev. letter (if applicable)
4. Material name or type as stated on the Purchase Order with the referenced Vendor part number if

different from the PacSci EMC purchased part number.
5. Quantity
6. Material lot or identification number
7. Date of manufacture.
8. Start and length of shelf life or expiration date. If shelf life is determined to be unlimited, expiration date will be identified as “unlimited” or “NE” (indicating no expiration).
9. Storage temperature, if other than room ambient

SQC 26A – Certificate of Age/Environment Sensitive Material (80% Shelf Life)

This SQC follows all the requirements of SQC 26 except that the minimum remaining manufacturer’s recommended shelf life at the date of receipt shall be 80%.

SQC 26B – Age Control for Solderability (2 year maximum for Electronic Components)

All electronic components must have a lot date code (or date of manufacture) of less than 2 years old at the time of shipment to PacSci EMC, or the supplier shall provide evidence of PacSci EMC approved solderability testing prior to delivery.

Each shipment shall include one legible copy of certification containing:

1. Supplier’s name and address
2. PacSci EMC Purchase Order Number
3. PacSci EMC part number and vendor part number, including dash number and revision letters.
4. Date of Manufacture

**Note: If the supplier is not an authorized factory distributor for the component, the original OEM certification must accompany the shipment. Any deviations will require the submittal and PacSci EMC approval of a Vendor Information Request.*

SQC 26C – Age Control for Solderability (4 year maximum for Electronic Components)

This SQC follows all the requirements of SQC 26B except that the components must have a lot date code (or date of manufacture) of less than 4 years old at the time of shipment to PacSci EMC.

SQC 26W – Control of Silver Coated/Plated Copper Wire

Silver Coated/Plated Copper Wire shall be adequately protected from moisture and oxygen on any exposed metal ends. Supplier’s certifications must state the wire is silver coated/plated copper wire. Upon receiving silver coated/plated copper wire at PacSci EMC, the receiving inspection department shall process the material per DI-QA-206(CH) Inspection and Testing, Age Sensitive Control procedure to protect against “red plague.”

SQC 27 – Record Retention Requirement - 10 year

The supplier shall retain a set of all records associated with this product for a minimum of 10 years. This includes but is not limited to manufacturing data, test results and material certs and data sheets. Please note that at the end of 10 years the supplier must notify PacSci EMC at least 6 months prior to disposing of any records. Any deviations from this clause will be specified on the purchase order.

SQC 27A – Record Retention Requirement - 5 year

This SQC follows all the requirements of SQC 27 except that the minimum record retention is five years.

SQC 27B – Record Retention Requirement - 20 year

This SQC follows all the requirements of SQC 27 except that the minimum record retention is twenty years.

SQC 27C – Record retention - 15 year

This SQC follows all the requirements of SQC 27 except that the minimum record retention is fifteen years.

SQC 28 – Certificate of Compliance (Non-Age Sensitive Material)

Shipment of non-age sensitive material shall be accompanied by one legible copy of an approved (signed) supplier certification, using Supplier Certificate of Conformance (PacSci EMC Form DI-QA-506(HL)F01 or the supplier’s equivalent). The document must certify that all requirements of the Purchase Order have been complied with.

The certificate at a minimum shall contain the following information:

1. Supplier’s name and address
2. PacSci EMC P.O. number
3. PacSci EMC Part number and Vendor Part number, including dash number and revision letters
4. Date code (applicable to electronics only). Date code on container is acceptable
5. Quantity
6. Lot number and serial numbers, if applicable

7. Signature by authorized representative (electronic signature acceptable)

SQC 28A – Certificate of Compliance (Special Distributors)

Distributors of material used for deliverable product shall be on the PacSci EMC Approved Vendors List and must comply with all the requirements set forth in clause SQC 28 above, plus the following:

1. Name of original manufacturer
2. Lot or serial number(s) or date code

SQC 28B – Certificate of Compliance (Non AVL distributors).

Distributors of material *not* used for deliverable product are *not* required to be on the PacSci EMC Approved Vendors List, but shall comply with the requirements set forth in clause SQC 28 above, plus the following:

1. Name of original manufacturer (if applicable)
2. Lot or serial number(s) or date code

SQC 30 – Customer Approved Sources

For all materials and outside processing for this purchase order, PacSci EMC will specify which vendor/s to use. If a vendor is not specified, contact PacSci EMC for direction.

SQC 31 – Certificate of Material Conformance

The seller shall provide with each shipment, a Certificate of Conformance (C of C) for the raw material supplied or used in the parts supplied. The C of C shall be from the original raw material supplier and include original supplier lot number, material specification, tests conducted and any other relevant information needed to identify the raw material. The above certification(s) shall show acquisition traceability to the seller whose name appears on the PacSci EMC purchase order. Acceptable examples include foundry report, mill report, dimension/ description, temper/hardness, alloy and condition. The supplier shall maintain the original mill certification and any secondary independent test laboratory certification(s) if any additional process was done after original mill certification for procured metallic material that shall include physical properties, chemical analysis and lot number(s).

If the seller is a distributor, a separate and independent Distributor Certificate of Compliance (DCOC) shall also accompany each shipment, which certifies that the Purchase Order items were produced from material for which the supplier has specific data or other objective evidence to the effect that the material conforms to drawings and/or specification. In the event the seller procures the Purchase Order items from a source other than the original raw material supplier, acquisition traceability shall also include distributor documentation for each distributor in the supply chain.

The certificate shall list the following:

1. Supplier's name
2. PacSci EMC Purchase Order (PO) number
3. PacSci EMC and/or supplier part number, including dash and revision letter (if referenced on the PO)
4. Quantity
5. Lot number (manufacturer/heat/batch number)
6. Material type and specification number or an actual material certification traceable to the PacSci EMC part and PO number.

NOTE: These requirements do not apply to COTS items as part of this PO (HELICOIL, SCREWS, ETC.)

SQC 31A – Certificate(s) of Material Conformance (COTS items)

Supplier must provide legible copies of certifications for commercial off the shelf items (COTS) ordered to military or industry specifications (MS, NAS, AA, AN, etc.). Certifications shall include quantity, material type and specification number traceable to the PacSci EMC PO and part number.

SQC 32 – Certificate of Material Conformance (PacSci EMC furnished material traceability)

Each shipment shall be accompanied by one legible approved Supplier Certificate of Conformance (PacSci EMC Form DI-QA-506(HL)F01 or supplier's equivalent), or a copy* of the PacSci EMC provided traceability (as applicable) that certifies that the purchase order items were produced from materials furnished by PacSci EMC.
The certificate (or copy*) shall list the following as a minimum:

1. Supplier's name
2. PacSci EMC P.O. number
3. PacSci EMC Part number (if referenced on the PO) and Vendor #, including dash and revision letter and Quantity
4. Lot number and serial number if applicable
5. Material traceability, as furnished by PacSci EMC
   a. PacSci EMC material P.O./W.O. number
   b. PacSci EMC I.R./NCR number, when listed

SQC 33 – Certificate of Material Conformance, Preference for Domestic Specialty Metals*

Suppliers must use specialty metals melted in United States or its approved outlying areas. Specialty metals (Steel & Metal Alloys*) produced outside of the United States or its outlying areas will not be used or provided unless the country of origin of melting (Qualifying Country) is listed in S 225.872.

This requirement shall be flowed down to any sub-tier suppliers. The DFARS list is maintained by the US Department of Defense and is accessible on the web site:

http://www.acq.osd.mil/dpap/dars/dfars/html/current/225_8.htm#225.872

Specialty Metals* are defined by DFARS clause 252.225-7008 current revision.

Each shipment shall be accompanied by one legible copy of an approved Certificate of Conformance that certifies the origin of material melt of specialty metals by a qualifying country.

The certificate shall list the following:

1. Supplier's name
2. PacSci EMC Purchase Order (PO) number
3. PacSci EMC and/or supplier part number, including dash and revision letter (if referenced on the PO)
4. Quantity
5. Lot number (manufacturer/melt/heat/batch number)
6. Material type and specification number or an actual material certification traceable to the PacSci EMC part and PO number.
7. Country of material melt
8. Copy of Mill Certification and chemical/physical reports from the producing mill.

SQC 33A – Certificate of Material Conformance, Use of All Domestic Metals

Suppliers are to provide and certify that all metal constituents in the items provided originated or were melted in United States. Each shipment shall be accompanied by one legible copy of an approved Supplier Certificate of Conformance.

SQC 34 – Certificate of Domestic Origin

Suppliers are to certify that all constituents in the items provided originated in the United States.
Each shipment shall be accompanied by one legible copy of an approved Supplier Certificate of Conformance.

SQC 38 – Calibration Services

Supplier test equipment calibration services must have a calibration system conforming to ISO 10012:2003, ANS/ISO/IEC 17025:2005 and ANSI/NCSL Z540.3-2006.

Calibration procedures must be maintained which provide sufficient information for periodic calibration of measuring and test equipment (M&TE). The report, as a minimum, shall include the following information:

1. Date of Calibration
2. Specification(s) to which calibrated
3. Identification or serial number of the item to which the report pertains
4. Evidence of traceability for all calibrations performed to the National Institute of Standards and Technology (NIST).
5. Name and certification of the agency performing the calibration(s) if other than the supplier.
6. Results of calibration(s) performed including the initial (as received) and (as returned) measurements. The data shall include a statement of uncertainties (tolerances) or accuracy of standards used, including data for any out-of-tolerance conditions found.
7. Relevant environmental or other conditions under which the calibration was obtained and for which the stated tolerances are valid, as applicable.
8. Corrections which must be applied if standard conditions of temperature, gravity, air buoyancy, etc. are not met or differ from those at time and place of calibration, when applicable,
9. Each shipment shall be accompanied by one legible copy of an approved Supplier Certificate of Conformance.
10. Suppliers must return replaced parts to PacSci EMC.

SQC 42 – Test Data

One copy of the Supplier's or sub-tiered supplier's test data, identifiable to the material or items supplied, will normally accompany shipment and will reference the PacSci EMC Purchase Order number, the tests performed, the lot number and serial numbers (as applicable), and the applicable specification. All test data, qualifications and acceptance test reports will meet PacSci EMC P.O. requirements, as applicable and to be retained per the requirements in the General Terms and Conditions.

SQC 43 – Printed Wiring Board (PWB) Requirements
SQC 43A – PWB Coupons and Test Data-

Each shipment shall be accompanied by one representative test coupon for each lot or batch along with a legible copy of all applicable test data from the tests conducted on printed wiring boards **or subassemblies** submitted to PacSci EMC.

SQC 43B – PWB DPA Requirements

The supplier shall provide one representative printed wiring board destructive physical analysis (DPA) cross-section sample and DPA report for each panel unless otherwise specified. Along with a legible copy of the report, the supplier is to provide a certification with a *signature of the agency representative* that performed the DPA attesting to conformance to specification requirements. (Electronic signature or signed validation is acceptable unless otherwise specified by contract)

SQC 43C – PWB Design Services

Artwork shall be supplied to Buyer for approval in electronic format that is readable with free viewers. Fabrication of the PWB shall not proceed prior to artwork approval by the Buyer. If no changes are made to the design, the final artwork shall be supplied to Buyer for documentation purposes.

SQC 43D – PWA Sub-Tier Flowdown Requirements.

Printed Wiring Assembly (PWA) suppliers shall assure complete flow down of applicable PacSci EMC requirements to all sub-tier suppliers. Supplier shall be provided the applicable drawing, applicable Quality Assurance Provisions and any other requirements stated in the Purchase Order applicable to the PWA or sub-tier supplier.

SQC 43E – PWB Testing

PWB's on this order shall be tested to the requirements of IPC-6012, IPC-6013, or MIL-PRF-50884, Group A and B prior to delivery. Copies of Group A test data shall accompany each shipment of PWB's. Group B test data shall be retained on file.

Coupons and Micro-sections The PWB supplier shall incorporate coupons on the fabrication panel that are representative of all the technology in the PWB including the worst-case condition of such features (e.g. annular rings, etc.).
Micro-sections shall be performed on a read and record basis with data included in the PWB certification. One additional set of coupons shall be provided to PacSci EMC with each lot of PWB's.

SQC 43F – PWA Assembly Special Processes and Certifications

The PWA supplier shall provide separate certifications from each supplier of a special process. Special processes include wire bonding, soldering, plating, PWB manufacture, adhesive bonding, etc. Certifications shall include lot date codes or lot numbers for all components used in the assembly, including those supplied by all suppliers of special processes shall be a PacSci EMC approved or directed supplier (PWA supplier may add the applicable PacSci EMC PO# reference on the sub-tier certs). Each certification shall contain as a minimum:

1. Supplier name
2. Supplier Address
3. PacSci EMC PO Number
4. Part number, dash number and revision
5. Quantity processed
6. Lot date code or batch number
7. Process name, specification (with revision), along with type and class.

SQC 43G - EEE Component Sub-Tier Flowdown Requirements.

EEE Component suppliers shall assure complete flow down of applicable PacSci EMC requirements to all sub-tier suppliers. Supplier shall be provided the applicable drawing, applicable Quality Assurance Provisions and any other requirements stated in the Purchase Order applicable to the EEE Component or sub-tier supplier.

NOTE: **LM Flow down for EEE parts**

EEE parts for the PAC3 MSE ISD Program shall be received by PacSci EMC with a date code no more than five (5) years of the manufacturing date. Upon acceptance, EEE parts have an unlimited shelf life.

SQC 45 – Chemical Test Reports

Each shipment shall be accompanied by one legible copy of the actual test data from the chemical tests conducted on materials submitted to PacSci EMC. The reports must contain the *material lot number, specification, material type, and signature of the responsible representative or subtier supplier* (Electronic signature or signed validation is acceptable unless otherwise specified by contract) attesting to conformance to specification requirements.

SQC 46 – Physical Test Reports

Each shipment shall be accompanied by one legible copy of the actual test data from the physical tests conducted on materials submitted to PacSci EMC. The reports must contain the *material lot number, specification, material type, and signature of the responsible representative or sub tier supplier* attesting to conformance to specification requirements. (Electronic signature or signed validation is acceptable unless otherwise specified by contract)

SQC 47 – Inspection Plan and Report

The Supplier shall complete, sign and date the supplied Inspection Plan & Report (IP&R) or Receiving Inspection Operation Sheet (RIOS) to the specified AQL* (Acceptable Quality Level), or submit documentation that includes all the requirements of the supplied IP&R or RIOS.

NOTE: Suppliers are to fill in the "Actual/Span" blanks with actual values. Values shall be either variable or Accept/Reject as specified by the inspection document. Any out of tolerance values requires a VIR submitted to PacSci EMC *prior to delivery (see page 2).*

Inspection Plan AQL's* provided in these plans are for sample size determination only. There is no implied or permissible reject quantity allowed for deliveries to PacSci EMC based on AQL table accept/reject allowances.

SQC 54 – Special Process Approval

The supplier must get approval from Pacific Scientific on all "**special**" processes used by the supplier or their sub-tiers that will be performed when making these parts. Examples of special processes are welding, heat-treating, cleaning, electroplating, anodizing, chemical film, or non-destructive testing. If there is any doubt if a process is considered "special", contact Pacific Scientific for help.

SQC 56 – Supplier Process Change Control

Supplier shall notify PacSci EMC of any proposed changes to the established baseline of company ownership, materials, processes, sub-tier suppliers or inspection testing methods, techniques and/or facility changes. Request is to be submitted on PacSci EMC form# 2030, Vendor Information Request (VIR), available at psemc.com. PacSci EMC Quality Engineering approval is required prior to implementation of any proposed changes. Process changes do not apply to standard hardware (nuts, bolts, washers, etc.) that is ordered to military, federal or industry specifications or standards (e.g., MS, AN, NAS, etc.) or to metallic raw material (plate, sheet, bar, extrusion, etc.) that is purchased from a mill.

SQC 58 – Packaging of Springs and Threaded Items

For springs, packaging shall ensure that the items do not become inter-twined, tangled or damaged. The use of tubes or rods for packing shall be employed.

For threaded items, all internal and external threads shall be sufficiently protected to prevent damage to any processed surface during transit.

SQC 59 – Removed

SQC 60 – Serialization

Each line item carrying this SQC shall be identified by serial number, as required in the Purchase Order, drawing, and/or specification. No duplication of serial numbers is allowed. The supplier shall assign serial numbers unless provided by PacSci EMC in the purchase order. The material for all serialized items shall be traceable to their source. This requirement applies to all sub-tier suppliers.

SQC 62 – Homogeneous Requirements

All material and/or parts supplied under this Purchase Order shall be from one homogeneous and identical lot; that is, there was no change in the material constituents, manufacturing location, process, or design during manufacture of the lot by the supplier.

SQC 63 – Manufacturing Lot or Batch Number

All parts, materials, and/or applicable documents shall be identified by the supplier with a lot number, date lot code, batch number, heat number, heat code, heat lot number or melt number. Where it is not practical to mark the part, the smallest container package shall be marked or tagged with the above data. All applicable documents (chemical and physical reports, certifications) shall include the above- required identification, as well as a reference to the PacSci EMC Purchase Order Number.

SQC 70 – First Article Inspection (FAI) Each Order

This clause requires a FAI with every order. The FAI shall be conducted on 1 part that is representative of the lot provided unless otherwise specified. The FAI will be performed on all applicable drawings (including notes) and specifications. All suppliers must use the AS9102 format. The FAI must be maintained by the supplier and be made available for PacSci EMC review upon request. The First Article shall include a ballooned drawing along with the First Article Inspection Report. A copy of the FAIR, along with the part/s used to perform the FAI must be clearly identified and included with the shipment.

The First Article Inspection Report shall include:

A. Tool part number and serial number.
B. Cavity ID number (Note if tool has multiple cavities, the FAI must be performed on each cavity).

SQC 70A – First Article Inspection (FAI) As Req.

The supplier shall perform an initial FAI as defined in SQC 70 if there has been a lapse in production for

more than 12 months or changes to the manufacturing process or product design. The supplier shall perform a full FAI or partial FAI for affected characteristics, when any of the events outlined under the "Partial or Re-accomplishment of First Article Inspection" Section of AS9102 applies. If the supplier has not had a lapse in production that exceeds 12 months and there have not been any changes to the manufacturing process/product design or any other items noted in AS9102, the supplier must state on a certification that:

1. This product has not seen any lapse in production that exceeded 12 months.
2. There have been no changes to the manufacturing process or product design or any other items as noted in AS9102 since the first article was performed.

SQC 70B – First Article Inspection (FAI) As Req.

This clause has the same requirements of SQC 70A except the lapse in production cannot be greater than 6 months.

SQC 70C – First Article Inspection (FAI) As Req

This clause has the same requirements of SQC 70A except the lapse in production cannot be greater than 24 months (2 years).

SQC 72 – Tool Proofing

Tool proofing shall be accomplished on all PacSci EMC authorized, vendor-furnished tools manufactured or acquired for use on this order by the Supplier's Quality Control. The Supplier shall not manufacture or modify any such tooling unless authorized by a tool order. Objective evidence of proper control and maintenance shall be maintained by the Supplier and subject to audit by PacSci EMC.

SQC 80 – Certificate of Qualified Products List (QPL)

Each shipment shall be accompanied by one legible copy of a Supplier Certificate of Conformance (or the supplier's equivalent form with the same information) that identifies the materials as qualified to the required specification and listed on an official Government Qualified Products List (QPL). Where material is qualified but not included in the QPL, the certification shall reflect the qualifying test report number. Approved vendor listings issued by prime contractors will be utilized when required by contract.

SQC 81 – Special Requirements

Refer to the Purchase Order notes or attachments for additional special requirements.

SQC 84 – Electrostatic Discharge (ESD) Protection

Line items given SQC 84 shall be identified, handled, processed, and packaged to provide proper electrostatic discharge protection within the guidelines of JEDEC/EIA 625-(Requirements for Handling Electrostatic Discharge Sensitive Devices).

SQC 86 – Obsoleted

SQC 91 – Obsoleted

SQC 93 – Statistical Process Control (SPC)

The supplier shall provide variable data to support compliance to the required capability, as outlined in a supplier or PacSci EMC generated and/or PacSci EMC approved SPC Plan. Data shall be submitted as required by the purchase order.

SQC 94 – Mission Assurance Requirements

SQC 94A – Configuration Control & Notification

This clause applies to MDA products.

The supplier shall be responsible for:

1. Controlling changes to parts or components manufactured to the established baseline of PacSci EMC drawings and specifications, PacSci EMC controlled supplier drawings, specifications and processes to ensure that the end product meets the specified configuration requirements. Change requests are to be submitted on PacSci EMC form# 2030, Vendor Information Request (VIR), available at psemc.com. Only PacSci EMC is authorized to approve changes to these drawings, processes and specifications.
2. Maintaining a system to control processes that fulfill the requirements of the purchase order, at its facilities and that of its sub-tier suppliers is required.
3. The supplier shall notify PacSci EMC prior to any changes to their sub-tier's designs (including proprietary designs), parts/components, materials, fabrication methods, processes*, tooling, equipment or methods used in the testing and acceptance of products delivered to PacSci EMC.

   *NOTE: *If the process performed by the Supplier or its sub-tier suppliers is identified as a Critical and/or Special Process then it shall be controlled by the Supplier in accordance with Quality Clause SQC 25A. The Supplier shall obtain PacSci EMC written approval prior to making any changes to such processes.*

4. The supplier shall notify PacSci EMC within one (1) working day of any recall notices for any product, raw material and/or components procured by the Supplier. The Supplier is also responsible to notify PacSci EMC of all such recall notices or GIDEPS from wholesalers, manufacturers, and sub-vendors and agencies.
5. Supplier shall inform PacSci EMC within ten (10) working days as to whether a GIDEP ALERT or MDA advisory notice is applicable. PacSci EMC shall notify the Supplier of GIDEP ALERTS, MDA advisory notices, or other potential recall notices.

SQC 94B – Approval of Acceptance Procedures

The supplier shall provide assembly and acceptance procedures to PacSci EMC for approval and is required to obtain written approval prior to any changes.

SQC 94C – Obsoleted

SQC 94D – Written Authorization to Subcontract

The Supplier shall notify PacSci EMC and receive PacSci EMC written approval prior to subcontracting work in excess of 40%, excluding cost of material, of the cost to produce any line item of the purchase order or RFQ.

SQC 94E – Quality Program Plan (QPP)

The Supplier shall prepare and submit a Quality Program Plan (QPP) to PacSci EMC. Contents of the plan used to implement requirements of the Purchase Order are subject to disapproval by PacSci EMC. The QPP shall include, as a minimum, the following:

1. A description or organization chart showing the Quality Control Organizational relationship to other functional organizations (i.e. Engineering, Purchasing, Manufacturing, etc.).
2. A detailed definition of the Supplier's method for assuring product quality at all phases of inspection and test from procurement through receiving, fabrication, testing, acceptance, preservation, packaging and shipping.
3. Flowcharts indicating inspection and test verification points through the receiving, fabrication, assembly and shipping sequence.

SQC 94F – Foreign Object Elimination (FOE) Program

The supplier shall establish and maintain an FOE program acceptable to PacSci EMC. The FOE program will be subject to review and approval by PacSci EMC. The material supplied on this purchase order shall be manufactured in an environment that is free of foreign object contamination. Any instances where foreign object contamination has occurred or is suspected will be reported to PacSci EMC prior to material acceptance and delivery. The intent of this quality requirement is to maintain continual awareness of the need to eliminate sources of foreign object contamination for all supplied material.

SQC 94G – Test Failure and Anomaly Notification

In the event of any Acceptance Test Procedure (ATP) or Destructive Lot Acceptance Test (DLAT) failure or anomaly, the test setup will be frozen and PacSci EMC will be immediately notified. Unless a safety issue is involved, there will be no activity performed until a formal failure review board (FRB) is conducted with PacSci EMC. If the FRB decides the test equipment is not the cause of the failure or anomaly, the FRB may allow continued testing on other production units.

Within any production lot or batch, parts which fail to meet ATP or LAT criteria during Non-Destructive testing will be set aside until completion of the specific test in process. Upon completion of the test, non-conforming parts will be documented and segregated from accepted product.

SQC 94H – Training and Certification Program

The Supplier shall establish an employee training program, subject to review and approval by PacSci EMC. The plan should include a required-skills vs. training matrix, re-training and decertification provisions, and provide documented evidence of competence.

SQC 94J – As-Built & Traceability Data

With each delivery, the supplier will provide an As-Designed vs. As-Built drawing record along with specific traceability information for every component and material used in the finished assembly.

SQC 94K – Date Code Limitation-Electronic Items

Electronic components provided on this order must have a manufacture date code of 18 months or less from the date of shipment.

SQC 94M – "No Pure Tin" Certification and Data

With each shipment, the supplier must separately certify (for each date code or lot supplied) that no pure tin or lead free components, finishes, material or solder was used or present in or on the components.

The preferred method of testing is XRF per MIL-STD-1580B w/CHANGE 2 Requirement 9. The certification must include spectrum analysis data showing composition of material on terminals of the device performed by the supplier or OEM and be included with each shipment. Each test report shall specify, the method used, tests performed, lot or date code designator and the results of the analysis. Each certification shall reference the PacSci EMC Purchase Order number and be signed by an authorized company representative. The definition of pure tin is >97% Sn (Tin) or <3% Pb (Lead). The use of solder alloys or surface finishes with less than 3% Pb composition is not allowed without customer approval.

In the event that tests were conducted at an independent lab or sub-tier, the reports will note supplier name, address, purchase order, part number, lot or date code designator and date of tests. The report is to be certified and signed by an authorized company representative.

SQC 94N – "No Pure Tin" Certification

Supplier shall furnish a signed copy of the OEM Certification with each delivery (for each date code or lot supplied) stating that no pure tin or lead free components, finishes, material or solder was used or present in or on the components. The definition of pure tin is >97% Sn (Tin) or <3% Pb (Lead). The use of solder alloys or surface finishes with less than 3% Pb composition is not allowed without customer approval.

SQC 95 – Boeing Approved Processors

The Supplier and any sub-tier contractor shall be or utilize Boeing approved process sources in accordance with DI-4426, which, along with information on Boeing approved processors and the User Instructions for the document, can be obtained from the Boeing website.

NOTE Boeing approved processors can be found at: http://www.boeing.com/companyoffices/doingbiz/index_quality.html

NOTE: Boeing D1-4426 can be found at: http://active.boeing.com/doingbiz/d14426/index.cfm

The supplier shall supply copies of the approved processor certification to Buyer with each shipment. If a specific Boeing inspection or processing criteria or requirement is referenced in the PO, the supplier shall include a specific reference of compliance to this on the supplier certification(s) with each shipment.

SQC 96 – Lockheed Approved Processors

The Supplier and any sub-tier contractor engaged in special processes (i.e. soldering, cleaning, X-Ray, welding, magnetic particle and penetrant inspection, heat treating, plating, etc.) shall have either:

1) Lockheed Martin approval of special processor, or
2) Lockheed Martin approval of supplier quality system to control sub-tier's performing special process.

Approval of special process sub-tier contractors does not relieve the Supplier of the responsibility for exercising control measures necessary to ensure that work performed by sub-tier contractors is in accordance with specification requirements. The Supplier shall have records of Lockheed Martin approval on file available for review. The Supplier shall provide legible copy of an approved special process certificate with each shipment that lists processor's name/address and process specification/revision traceable to the PacSci EMC part and PO number.

NOTE: A list of first tier Lockheed Martin approved special processors can be found in Exostar LM Procure to Pay Portal under Current Approvals Tab. Contact you PacSci EMC Buyer for a list of current approved processors.

SQC 97 – Single Heat Lot Control

The Supplier shall furnish the entire lot on this order from the same heat lot. The Supplier shall indicate the heat lot number on the Certificate of Conformance and flow down the heat lot requirement to all sub-tier processors. Sub-tier processors shall record the heat lot number on all certifications submitted to the Supplier.

SQC 98 – Test Document Review

The supplier shall review the entire test document to ensure all test requirements are met, regardless of the individual test paragraph identified in the Purchase Order.

SQC 99 – United Launch Alliance (ULA) Approved Processors

The Supplier and any sub-tier contractor engaged in special processes (i.e. soldering, cleaning, X-Ray, welding, magnetic particle and penetrant inspection, heat treating, plating, etc.) shall have either:

1) ULA approval of special processor, or
2) ULA approval of supplier quality system to control sub-tier's performing special process.

Approval of special process sub-tier contractors does not relieve the Supplier of the responsibility for exercising control measures necessary to ensure that work performed by sub-tier contractors is in accordance with specification requirements. The Supplier shall have records of ULA approval on file available for review. The Supplier shall provide legible copy of an approved special process certificate with each shipment that lists processor's name/address and process specification/revision traceable to the PacSci EMC part and PO number.

NOTE: A list of ULA approved special processors can be retrieved from http://www.ulalaunch.com/site/pages/Suppliers.shtml

SQC 100 – Removed

SQC 101 – Ammo Data Card (ADC) Traceability

The supplier shall include with each shipment a completed form (Form #2775). All fields on the form shall be filled out with the pertinent information of the item being shipped. No field can be filled "N/A" or "None." This form does not replace any other certification requirement outlined in this document. The completed form shall be signed by a company representative.

SQC 102 – No Quality Codes Specified

No code numbers specified, but general requirements still apply.

SQC 103 Technical Data Sheet
Each shipment shall be accompanied by one legible copy of the Technical Data Sheet.

SQC 104 Parts Library
The seller shall have a buyer approved parts library parts list defining all the part numbers applicable to the parts library. During design change activities the seller shall take necessary actions to ensure the parts library parts list is maintained current in accordance with the contractual requirements. All revisions to the parts library parts list require buyer review and approval.

SQC 105 – Aerojet Approved Processors

Special Process Sources:

Special Processes sources used (at any level) as defined on Aerojet Rocketdyne drawings or in Aerojet Rocketdyne design information, shall be performed by Aerojet Rocketdyne approved processors as noted in Supplier Portal Gateway. Refer to Aerojet Quality Clause Q019 for detail requirements.

Aerojet Clause: Q019 / Approved Process Source - with Deliverable Documentation
https://www.rocket.com/suppliernet/business-ar/qa-terms-and-conditions

Seller or Seller's subcontract process sources shall be an approved processor or shall use approved processors as required by purchase contract prior to commencing work under the applicable specification. A list of approved processors and associated processes are available from the Aerojet Rocketdyne Supplier Portal Gateway Approved Processor function.

Special processes are processes such as, but are not limited to, metallurgical and chemical processes, metal joining, bonding, plating, coating, anodize, surface treatment, cleaning and material removal by non-conventional methods, water jet, etc. which also includes selected nondestructive inspection methods (Radiography, Ultrasonic, Eddy Current, Liquid Penetrant, and Magnetic Particle) used to evaluate item conformance to design and quality requirements. Aerojet Rocketdyne Company design specifications and/or industry specifications controlling these processes are referred to as Special Process specifications also known as 'certified special processes'.

A Certificate of Conformance or equivalent Process certificate, signed by an authorized agent of the Processor / Seller shall be included with shipping documentation (packing slip).
The certificate shall include:

1. Purchase contract number, Line item number,
2. Part number(s),
3. Trace number (as applicable),
4. Process specification number with revision (if applicable)
5. Processing date(s) and name of the Processor(s) performing each of the approved processes.
6. Warranty; Conformance / Acceptance Statement: Specific process certifications (from the approved processor) must include a statement of acceptance to the requirements specified / flowed (Processing Specification).

https://accessto.rocket.com/rpr00283/sp/ap/ap_index_fi.jsp

SQC 106 – L3 Approved Processors

The Supplier and any sub-tier contractor engaged in special processes (i.e. soldering, cleaning, X-Ray, welding, magnetic particle and penetrant inspection, heat treating, plating, etc.) shall use L3 approved processors.

Approval of special process sub-tier contractors does not relieve the Supplier of the responsibility for exercising control measures necessary to ensure that work performed by sub-tier contractors is in accordance with specification requirements. The Supplier shall provide a legible copy of an approved special process certificate with each shipment that lists processor's name/address and process specification/revision traceable to the PacSci EMC part and PO number.

SQC 107 – MRB Authority – Lockheed

The supplier is not allowed to perform material review board (MRB) actions or disposition of nonconforming material with the intent of delivering such material without the express written authorization of PacSci EMC purchasing and Lockheed Martin. Recommended dispositions or departures from drawings or specifications (REPAIR or USE-AS-IS) must be forwarded to PacSci EMC for approval. The supplier shall wait for written approval from PacSci EMC and its customer, Lockheed Martin, before proceeding with MRB actions. Any deviation from the MRB process without prior written PacSci EMC and Lockheed Martin approval shall result in scrapping of the hardware at the supplier's expense.

The use of the PacSci EMC Vendor Information Request (VIR) form is the preferred method to transmit such requests and is located on the PacSci EMC website. The PacSci EMC Buyer must approve any departures from purchase order requirements. Previous dispositions shall not be considered precedence for acceptability. PacSci EMC may request supplier to submit cause and corrective action on discrepancies related to an order.