

SCOPE:

Below lists Mercury Systems, Inc. (Mercury) Quality Notes. They are Mercury's Purchase Order contractual requirements to the supply base. The Quality Notes are applicable to all domestic Mercury organizations/facilities with the exception of MDS in Cypress, CA. Any reference to Mercury in the following Quality Notes refers to the Mercury facility that has issued the applicable Purchase Order. Quality Notes are located under the part number line on each PO. They are determined by commodity type and may vary for each part number.

COTs Items may be exempt from some of the Quality Notes and the Mercury Procurement Organization should review this in advance of placing the purchase order to place any exception notes on the top of the purchase order.

In the event there is no quality note listed under the line item, Mercury's General Quality Note (MQ1) shall be required for the Purchase Order.

DEFINITIONS:

"Item or Items" is an all-inclusive term used in place of any of the following: article, assembly, commodity, component, data, document, equipment, firmware, goods, machinery, material, merchandise, model, module, part, piece, product, report, service, software, subassembly, subsystem, supplies, support systems, system, test or unit, to name some.

"Purchase Order" or "PO" refers to the applicable purchase order that has been issued to Supplier by Mercury that references these Mercury Quality Notes.

"Sub-tier sources" or "Sub-tier suppliers" refers to Supplier's subcontractors, suppliers, vendors, or any entity in Supplier's supply chain that is involved with any portions of the Items that Supplier will be furnishing to Mercury.

"Supplier" refers to the entity that is receiving the Purchase Order from Mercury and is responsible to Mercury for fulfilling the Purchase Order.

"COTS" refers to commercial off the shelf items that may be "buy" items or "off-the-shelf" commodity items.

MQ1: GENERAL QUALITY ASSURANCE REQUIREMENTS

A. QUALITY MANAGEMENT SYSTEM (QMS)

Supplier shall maintain a QMS which conforms to requirements of AS9100 or ISO 9001 or equivalent. If Supplier has not been certified to AS9100 or ISO9001 they are expected to have a QMS that meets the requirements of the ISO/AS standard where it relates to Items being supplied to Mercury.

Supplier shall maintain an English language translation of its quality manual and all supported manufacturing and process documentation such as certifications, manufacturing plans, inspection reports, process certifications, test reports and any other documents in support of Mercury's Purchase Order requirements.

It is the requirement of the Supplier to provide current QMS certifications copies to Mercury Supply Chain on an annual basis and/or as updates occur.

B. FLOW DOWN

Supplier shall ensure that applicable requirements of the Purchase Order, engineering documents / drawings and these Mercury Quality Assurance Requirements are flowed down to its Sub-tier suppliers. In addition, show evidence that they have verified that their sub-tier suppliers are in turn are flowing the requirements down to all its Sub-tier suppliers. All references to documentation, certifications and any other requirements that are required of the Supplier are also required of all Suppliers' Sub-tier sources, even if not noted.

C. CHANGE NOTIFICATION

For custom (Mercury and/or Supplier design) and/or build to print Items supplied to Mercury, Supplier and its Sub-tier suppliers shall submit a written request to Mercury and receive prior written permission from Mercury before any Item can be produced and delivered with any of the following changes:

1. to the manufacturing facility location and/or test facility,
2. to senior management
3. to key Sub-tier suppliers,
4. to the in-sourcing or out-sourcing of any operations,
5. to Item,
6. to process,
7. to Sub-tier suppliers' process,
8. to raw material and/or material included in the Item,
9. to fabrication,
10. to product end of life notification,

to any activity affecting the results of the Item irrespective of whether the changes affect form, fit, function, weight, interchangeability, maintainability, reliability, unique key characteristics or safety, etc.

All technical and non-technical requirements as outlined or defined by the pertinent drawing and or material specification shall be specifically and strictly adhered to by the approved supplier.

Supplier shall flow-down this requirement to Supplier's Sub-tier sources.

Supplier shall provide change documentation along with the shipment(s) once approved.

Changing of Test Facility: Supplier shall not change a test facility nor use another test facility to meet specification/drawing requirements without prior written approval from the Mercury Supply Chain, if a specific test facility was previously approved by Mercury as provided for in the procurement document.

Change of Management/Ownership: Supplier shall notify the Mercury Supply Chain in writing when a significant change in management or ownership has occurred.

D. RIGHT OF ACCESS

Mercury, Mercury's customers, Government, and the applicable regulatory authorities shall have the right to access, audit and or inspect all applicable facilities of Supplier and other applicable facilities at any Sub-tier source that are involved in the performance of the PO. The supplier's quality and manufacturing processes are subject to review by authorized Mercury representatives at any time during production. In addition, Mercury, Mercury's customers, and the applicable regulatory authorities shall have the right to access all records of Supplier and the records at any Sub-tier source that are relevant to the PO.

E. MATERIAL OBSOLESCENCE

Supplier will notify Mercury at least one (1) year in advance if Supplier anticipates discontinuing the manufacture of any of Items that it has furnished, is furnishing, or will be furnishing to Mercury.

Supplier shall make available discontinued Items for five (5) years after the Items are discontinued by:

1. Finding an acceptable source to provide the discontinued Item which is acceptable to Mercury, or
2. Finding a substitute for the discontinued Item which is acceptable to Mercury, or
3. Carrying an inventory of the Item as required to support Mercury, or
4. Recommending a replacement or upgraded Item, in which case Supplier shall formally notify Mercury of its intent and shall provide a detailed engineering analysis of the re-screening or testing requirements which will provide form, fit and function equivalency to the original Item, or

After exhausting the above alternatives, Supplier shall provide Mercury with the opportunity to make a last-time buy.

F. DOCUMENT / RECORD RETENTION AND TRACEABILITY (7 YEARS)

Records: Supplier and its Sub-tier suppliers shall maintain verifiable objective evidence of all records of analysis, assembly, conformance, inspections and tests performed, obtained results, and dispositions of non-conforming Items. Objective evidence includes but is not limited to, chemical and physical reports, certifications, inspections, test, engineering changes and other quality and/or engineering data. These records shall be identified to associated Items, including lot number of Items, unit or lot serialization when applicable, and certifications. All data shall be traceable to the organization performing the testing, special processing and / or inspection(s). Supplier shall retain Quality Assurance and Quality Control records, manufacturing data, engineering drawings and tooling. All factual information shall be included to demonstrate conformance of specification and / or Purchase Order requirements. These shall be made available for review by Mercury or Mercury's customers, upon request.

Traceability: Supplier shall maintain records of Item traceability that ensures tracking of the supply chain back to the manufacturer (OEM) of all Items being delivered. This includes a seven year record retention from all levels of distribution. This traceability method shall clearly identify the name and location of all of the supply chain intermediaries from the manufacturer to the direct source of the Item for Supplier. All Items must be traceable to the manufacturer's records of acceptance and identified by applicable lot number, date code, material, manufacturer s type, specification, applicable change letter or number, heat number, etc. Items fabricated by Supplier shall be identifiable to the lot of material used.

Retention: (7 Years) Unless extended, retention requirements are specified elsewhere in the Purchase Order, records shall be retained by Supplier in a safe, accessible location for a period for seven (7) years following final payment under the Purchase Order. Records shall remain legible and readily retrievable for review during reasonable business hours. Anytime during or after the seven-year retention period, records shall not be destroyed without Mercury's prior written concurrence. Supplier shall notify Mercury of any activity at Supplier's facility that may impact the retention of these records. Supplier and Sub-Tier supplier must have adequate back-up and disaster recovery processes in place for all records. Supplier shall be able to deliver records within 48 hours from request.

G. ALTERING DATA ON DOCUMENTS

The use of any method that causes the original data on documents to be obliterated and unreadable (i.e. the use of correction fluids, correction tape, write-over or other methods) to correct, modify or otherwise alter the data and / or entries on any certifications, test reports or other documents required by the Purchase Order, is strictly prohibited. Corrections may be made on inspection reports provided if it is obvious that a correction was made and it is signed (initialed) and / or stamped by an authorized individual. Upon receipt at Mercury, Items represented by documents that show evidence that they have been corrected or altered in an unauthorized manner are subject to return to Supplier.

H. COUNTERFEIT MITIGATION

Supplier is NOT authorized to deliver any Item procured from sources other than Original Equipment Manufacturers (OEMs) or Original Component Manufacturers (OCMs), or their authorized distributors without prior written authorization from Mercury.

Supplier shall maintain a Counterfeit Item risk mitigation process internally and with its Sub-tier suppliers using SAE AS5553 as a guide. Supplier shall comply with Defense Federal Acquisition Regulation Supplement (DFARS) 252.246-7007 (Contractor Counterfeit Electronic Part Detection and Avoidance).

Any Non-Franchised Supplier must be certified to SAE AS6081 Fraudulent/Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition – Distributors Counterfeit Electronic Parts; Avoidance Protocol, Distributors.

Test houses services and Non-Franchised Suppliers conducting tests to mitigate counterfeit parts must be certified to SAE 6171 Techniques for Suspect/Counterfeit EEE Parts Detection.

I. CERTIFICATIONS

Supplier shall submit with each shipment and Item delivered a Certificate of Compliance (COC), which certifies that the material or parts furnished have been manufactured in accordance with Mercury's drawing and revision as specified on the procurement document. The certification must specifically contain:

- Mercury Part Number/Drawing No. and Revision (when applicable)
- Mercury procurement document number
- MIL-SPEC number (when applicable)

In addition, the Supplier shall be responsible for maintaining and supplying this documentation as objective evidence of meeting Purchase Order, document / drawing and flow down requirements. The Certificate of Compliance must be signed by a duly authorized representative of the supplier's quality function. One (1) reproducible copy of the Certification of Compliance shall be supplied to Mercury concurrently with each delivery of article(s). Certificate of Compliance from Sub-Tier Suppliers and distributors shall comply with all of the above requirements.

The COC may be a separate document or included on the packing slip / sheet. The COC shall include traceability to the Items provided. Examples of traceability documents indicating proper component transfer from one company to another in the supply chain include but are not limited to:

1. Packing slips,
2. Receiving documents,
3. Purchase Orders,
4. Shipping documents.

Certification of all Items or processes is required and must be passed on unaltered to Mercury with the Item. Sub-tier sources shall include all of the applicable technical and quality requirements contained in the Mercury Purchase Order including the requirement to furnish certifications and test reports the same as required of Supplier.

Certificates may include, but shall not be limited to: Certificates of Conformance / Conformity / Compliance / Analysis, Certificate of Origin, Certificate of Configuration, Certificate of Traceability, Inspection and Test Reports, Material Certification, Physical Test Reports, Plating Certificates, Test Certificates, etc.

Distributors - COC documentation requirements from distributors can be met in one of the following ways:

1. Original manufacturer's certifications shipped with Items plus the distributor's certification.
2. Distributor's certification referencing original manufacturer's certifications and documentation that is maintained on file. Distributors in this category are designated as "Authorized or Franchised Distributors" and must be licensed by the manufacturer to distribute product.

Special Processes and Testing - Supplier performing special processes and testing, such as but not limited to: Autoclave cure, Bronzing, Chemical Processing, Composite manufacture, Descaling, Elastomeric Seals, Environmental and Laboratory Testing, Etching and Priming, Firing, Flame/Metal Spraying, Heat Treatment, Non-conventional Machining (ECM/ECG/EDM/LBM), Nondestructive Testing (i.e. Ultrasonic, Magnetic Particle, Dye Penetrate, and X-ray inspections, etc.), Plating, Painting, and Coatings, Sealants, Welding, Brazing, Soldering, etc., shall list the number and revision level of the applicable process specification (s), lot size, lot number or heat number, sample size, applicable process specifications / controls and applicable test results. If the job was processed using a NADCAP or other accredited process, Supplier shall include a statement indicating the job was processed per their Accreditation and shall include their Accreditation Number and expiration date.

Traceability – Supplier shall maintain records for traceability throughout all steps of their manufacturing and outside processing or distributing processes for all Items delivered under the Purchase Order. All Items must be traceable back to raw materials. Traceability requirements shall also apply to Items that are reworked.

A lot consists of a singular part number and must be representative of a single product/process run and all parts must be run through all internal and outsourced processes at the same time. If multiple part numbers are being manufactured at the same time, each group of part numbers shall be assigned its own individual lot number.

COC contents – The COC must contain, at a minimum, all of the following that are applicable:

- a) Mercury Purchase Order number
- b) date
- c) part number
- d) revision
- e) shipment quantity
- f) serial number(s)
- g) lot / batch
- h) date code
- i) country of origin
- j) statement of conformance to the Purchase Order requirements
- k) certifiers title, and signature or stamp and date
- l) Supplier's name and address

Supplier shall retain a copy of all documents in support of its and its Sub-tier suppliers' activity, including Sub-tier suppliers' COC, Material Analysis, Certificates and Test results where applicable. Certifications from Sub-tier suppliers to Supplier shall provide traceability to the manufacturer and manufacturing lot. Certification documents are required to be retained for a minimum of seven (7) years.

Mercury reserves the right to reject or refuse delivery of Items that do not have appropriate documentation.

J. INSPECTION SYSTEM

The supplier shall maintain a quality system and provide inspection which is adequate to ensure that all materials delivered against this procurement document meet all specified requirements. Supplier shall manufacture, verify, inspect, test, dimensionally assess, service, and deliver all Items in accordance with the Purchase Order, documents (including BOM) / drawings and to all requirements identified on them.

Resubmittal of Rejected Items: Any item rejected by Mercury and subsequently resubmitted by the supplier shall be clearly identified as a resubmitted item, indicating the procurement document number and Mercury's rejection document number on the supplier's certificate of conformance.

K. RIGHT TO RETURN

Mercury reserves the right to return any Item delivered under this Purchase Order that fails to meet the advertised physical and functional characteristics as well as industry accepted workmanship standards. Supplier's concurrence will be sought prior to the return of any Item.

L. MATERIAL REVIEW BOARD (MRB)

Unless otherwise specified in the PO, Supplier and its Sub-tier suppliers do not have the authority to process "use-as-is", "repair", "standard repair procedures (SRPs)" or "non-SRPs" via their Material Review Board (MRB). These dispositions, as well as deviations and requests for waivers, requiring MRB disposition shall be submitted to Mercury for approval (this does not include rework or scrap). Supplier shall utilize its appropriate nonconforming material disposition form and submit it to Mercury for approval.

M. CORRECTIVE ACTION AND FAILURE ANALYSIS

Supplier shall establish and maintain documented procedures for implementing corrective action. Any corrective action taken to eliminate the causes of actual or potential non-conformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered. Supplier shall implement and record any changes to the documented procedures resulting from corrective action.

The procedures for corrective action shall include at a minimum:

1. Effective handling of customer complaints and reports of the nonconformance,
2. Investigation into the cause of the nonconformance relating to the Item, process, and quality system and recording the results of the investigation,
3. Determination of the corrective action needed to eliminate the cause of the nonconformance,
4. Application of controls to ensure that the corrective action is taken and that it is effective.

On occasion, a nonconformance may be identified with the Items. In the event of that occurrence, failure analysis shall be performed by Supplier and a Supplier Corrective Action Request may be initiated. Supplier shall respond to a corrective action request in a timely manner. By written communication to Supplier, Mercury will describe the non-conformities along with a due date by which Supplier shall respond. If Supplier does not respond to the corrective action by the due date, its approved supplier status with Mercury may be revoked.

Mercury reserves the right to conduct verification of corrective action at Supplier's and its Sub-tier suppliers' facilities to assess the effectiveness of the corrective action taken.

Shipment of non-conforming material may cause the generation of a Supplier Corrective Action Request (SCAR), which must be answered promptly and satisfactorily. Failure to do so can cause removal from the Approved Supplier List.

N. FOREIGN OBJECT DEBRIS / DAMAGE (FOD) PREVENTION

The supplier shall establish and maintain an effective Foreign Object Damage (FOD) Prevention Program to reduce FOD using NAS412 as a guideline.

The material supplied on this purchase order shall be manufactured in an environment that is free of foreign objects. Material supplied shall be free of foreign objects. The supplier's program shall utilize effective FOD prevention practices. The program shall be proportional to the sensitivity of the design of the product(s) to FOD, as well as, to the FOD generating potential of the manufacturing methods.

Foreign Object Debris / Damage (FOD): FOD is any substance or object that is present on or within a part or product, but whose presence is not specified by the drawing, specification, or BOM for such part or product, including any substance, debris, or article alien to an Item which could potentially cause damage which downgrades or renders the Item unusable or unsafe for operation. Other contaminants having the same potential as foreign objects include, improper or incomplete cleaning and deburring of machine parts, high concentration of oil and / or water vapor in pneumatic test facilities, food and beverage residue, grease, etc.

1. **Foreign Objects Debris:** Any loose objects such as chips, cleaning materials, clippings, corrosion, detached burrs, dust, filings, grease, grindings, oil, RTV clods, screws, shavings, solder balls, staples, tools, washers, water, etc.
2. **Foreign Object Damage:** Any damage attributed to a foreign object that can be expressed in physical or economic terms which may or may not degrade the product's required safety and / or performance characteristics.

All delivered Items, including containers designed to protect Items, furnished by Supplier shall be free of any FOD.

O. PACKAGING, HANDLING, STORAGE AND PRESERVATION

All Items shall be packed, packaged, marked and otherwise prepared for shipment in a manner which is:

1. in accordance with best commercial practices unless otherwise specified in a particular manner, and
2. acceptable to common carriers for shipment at the lowest rate that could include ocean shipment for the particular Supplier; and
3. adequate to insure safe arrival of the Items.

The supplier is responsible for assuring that all items are delivered without damage or deterioration and are efficiently and economically packed for the method of transportation and type of handling involved. Unit and intermediate packaging shall be employed as necessary to prevent damage or deterioration.

Unless otherwise specified by the item drawing, specification or procurement document, packaging shall meet the following requirements:

The label and character size should be legible.

Supplier shall mark each container, rack, box or pallet with necessary lifting, cautionary handling and shipping information. Supplier shall be held responsible to ensure packaging is sufficient to protect Items from shipping damage (nicks, dings, bends, scratches, etc.). Supplier shall also assure that all packaged Items are permanently and legibly identified. Identification requirements always include the complete Mercury part number, part number revision level, quantity and Mercury Purchase Order number and may include any or all of the following that are applicable:

1. Name of manufacturer,
2. Lot Number and / or Date code (date of manufacture),
3. Identification and Quantity of Items per carton,
4. Serial Number,
5. Cure Date,
6. Expiration Dates
7. Static Sensitive Warning
8. Certificate of Origin (where applicable),
9. An Itemized package sheet must accompany each shipment.

Items subject to corrosion or damage or degradation or deterioration by contact with air, humidity or other factors during handling, construction, storage or transportation shall be cleaned and protected by a process designed to minimize exposure to the detrimental condition. Storage areas shall be suitably environmentally controlled. Supplier shall be responsible for the preservation and packaging of the deliverable Items in a manner that shall prevent corrosion, contamination, deterioration and physical damage and insure safe delivery in good condition using best commercial practices pursuant to ASTM D3951 unless otherwise stated on the Purchase Order. Packaging of the Item for shipping and storage shall insure that condensation on the Item does not occur. Supplier shall not use “pink poly” (polyethylene) for bagging or packaging. Supplier shall not use packaging “Peanuts” or “Popcorn”. Supplier shall comply with other additional packaging and shipping instructions as may be stated on the Purchase Order, Bill of Material, drawings, unique packaging instructions, or other Mercury or Mercury customer documentation.

For moisture sensitive parts being delivered, the parts shall be marked accordingly and have the appropriate moisture sensitivity labeling, barrier bags and desiccant.

P. APPROVED SUPPLIERS

Mercury maintains a list of approved suppliers. These suppliers are qualified by audit results and are subject to continuing performance measurements based on both conformance to requirements and delivery performance. Late shipments or the shipment of discrepant material will affect a supplier's approval rating, and can cause disqualification.

Q. SAFETY DATA SHEET (SDS - Suppliers Providing Chemicals)

Material Safety Data Sheets shall be made available to Mercury for each shipment of materials or chemicals that contain an MSDS. Whenever an SDS is revised, a post revision copy shall be furnished.

R. Personnel Awareness

The supplier shall ensure the adequacy of requirements prior to their communication to external provider(s) and ensure that their personnel are aware of their contribution to:

- Product or service conformity
- Product safety
- Then importance of ethical behavior.

Suppliers shall ensure that personnel awareness requirements are communicated to their subcontractors and subtier suppliers.

END OF QUALITY NOTE MQ1

MQ2 WORKMANSHIP

Supplier shall document and implement workmanship standards with acceptance criteria following the guidance of the workmanship standard defined in the Mercury drawings or other Mercury documentation. Unless otherwise noted in the PO or technical documentation, Supplier shall utilize latest revisions of IPC-A-610 Class 3, IPC J-STD-001 Class 3, IPC-7711/21, IPC CM-770, MIL-HDBK-454 and/or MIL-STD-883 as guidelines.

For microelectronic packages and covers, JESD9 criteria (part of JEDEC standard) shall be adhered to. It is meant to be used in conjunction with, and to not contradict MIL-STD-883.

Supplier shall ensure employees are certified to the appropriate standards, and shall make certification records available upon request.

MQ3 Physical or Chemical Test Report

Each shipment must be accompanied by a legible and reproducible copy of a physical or chemical test report identifiable with specification test requirements and material submitted. These reports must contain the signature of a responsible representative of the agency performing the test and must assure conformance to specification requirement.

MQ4 Special Process Certification

Special Processes - such as but not limited to: Autoclave cure, Brazing, Bronzing, Chemical Processing, Composite manufacture, De-scaling, Elastomeric Seals, Environmental and Laboratory Testing, Etching and Priming, Firing, Flame / Metal Spraying, Heat Treatment, Non-conventional Machining (ECM / ECG / EDM / LBM), Non-conventional Machining and Surface Enhancement, Nondestructive Testing (i.e. Ultrasonic, Magnetic Particle, Dye Penetrate, and X-ray inspections, etc.), Plating, Painting, and Coatings, Sealants, Welding, Soldering etc. Supplier may use any applicable Special Process source that is NADCAP (National Aerospace and Defense Contractors Accreditation Program) certified / approved without Mercury approval unless otherwise stated on the Purchase Order or associated documents. All other sources must be selected from Mercury's Approved Supplier List or approved in writing by Mercury.

The supplier shall be responsible for conformance of their outside manufacturer and/or processors to the applicable specifications.

For all Special Processes required by the Purchase Order and performed by Supplier or by Supplier's Sub-tier sources, Supplier shall furnish the certification / test report issued by the party actually performing the process. Each shipment shall be accompanied by a legible and reproducible copy. The certification / test report shall include a complete description of the process performed (name, applicable specification, revision in effect at the time of order, type, class, grade, etc., the quantity, part number/name), also the agency performing the outside service. The certification / test report shall contain a statement that indicates the applicable party has

performed all testing, chemical analysis and / or inspection required by the applicable specification and that objective evidence to support the certification is on file and available to Mercury for review upon request. The frequency and scope of these tests shall be as defined in the specification. Certifications / documents must be written / printed in ink, typed or carbon / photo copies signed by a responsible official of the issuing organization.

MQ5 Dimensional Data

Recorded findings on all dimensions shall be submitted with each shipment. Dimensions shall be provided per sampling plan ANSI/ASQ Z1.4, Level II, AQL 1.0, unless otherwise specified on purchase order.

MQ6 Off-The-Shelf/Catalog Item – DIE MAP (raw die not packaged)

Inspection Data: One (1) copy of the item drawing or applicable catalog page shall accompany parts for receiving identification and inspection.

MQ7 Test and Inspection Data

Inspection measurements and/or electrical test results of items on this procurement document shall be taken and included with each procurement document shipment. Actual data to be recorded shall be as specified in the detail specification/drawing. The supplier shall assure that products failing to meet performance requirements are not shipped to Mercury. As a minimum test data shall include:

- Mercury Part number/Drawing number and revision
- Mercury procurement document number
- Supplier Acceptance Test procedure number (as applicable) and revision date
- Characteristic(s) measured
- Date and test completion
- Evidence of test acceptance by supplier's quality function

MQ8 Inspection and Test Instructions

The supplier shall prepare and maintain written instructions for inspections and tests performed on the procurement document. The instructions shall include identification of the item to be inspected or tested, measuring and test equipment to be used, details of inspection and test operations to be performed, and the criteria for determining conformance or non-conformance to procurement document requirements.

- A) One legible and reproducible copy of each instruction shall be submitted to the Mercury Quality Assurance Department for approval prior to use.
- B) The instructions shall be available on file for review by Mercury and cognizant Government agencies. Changes to the approved Inspection and Test Instructions shall be submitted to the Mercury Quality Assurance Department for approval prior to incorporation.

MQ9 Source Inspection-Mercury

Items covered by this procurement document require inspection and/or test by Mercury at the supplier's plant. The supplier shall give a minimum of a 48-hour notice prior to required inspection. Mercury source inspection and/or test does not relieve supplier of any of the requirements of the procurement document, and Mercury reserves the right to accomplish final acceptance at Mercury's facility.

MQ10 Source Inspection-Government

Government inspection at the supplier's facility will be required prior to shipment. Upon receipt of this order, promptly notify the government representative who services your facility so that appropriate planning can be accomplished. The supplier shall give a minimum of a 72-hour notice prior to required inspection. Evidence of Government Source Inspection approval is required with each shipment.

MQ11 Traceability to Raw Material Level

Raw Material – A **raw material** COC shall accompany each shipment and include chemical and physical analysis. The certificate must state that the material supplied meets the applicable specifications and must specify the revision level of the material specification. The country of Origin must appear on the COC. **Clarify to ensure we get raw material certs from machined parts, raw metal and all special processing for custom parts.**

All items supplied under this procurement document shall be traceable to the raw materials used. If not supplied with the material the information shall be made available to Mercury upon request.

COTS parts and agreed upon metals commodities may trace to the agreed upon material lot size.

MQ12 Mercury First Article Inspection

This order is subject to the approval of a First Article sample at Mercury. Supplier should deliver one sample, which represents in all aspects, the items to be delivered, and await approval before shipping the remainder of the order. Manufacture of the remainder prior to the First Article Approval is at the risk of the supplier.

MQ13 Supplier First Article Inspection (AS9102)

Supplier is required to provide a First Article Inspection (FAI) that conforms to the requirements of AS9102, Aerospace First Article Inspection Requirement. This also includes the requirement for partial first article inspections for any changes to Items, process, change of location, two (2) year gap in production, etc., as defined by AS9102.

The First Article Inspection Report shall accompany the product upon delivery and the part the first article was performed on shall be appropriately identified in the delivery.

The First Article Inspection Report must show evidence of acceptance by Supplier's quality assurance representative.

Records of all first article activity will be documented and treated as quality acceptance records. Legible and reproducible copies shall be furnished with the shipment to Mercury.

Supplier shall flow this requirement down to its Sub-tier suppliers.

MQ14 ESD Sensitive Material

All components which are Electro-Static Discharge (ESD) and/or electromagnetic forces (EMF) sensitive must be processed, handled, packaged, identified, and shipped in accordance with MIL-STD-1686, "Electrostatic Discharge Control Program" or ANSI/ESD S20.20, "Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)."

Supplier shall maintain a documented Electro-Static Discharge (ESD) protection program, including employee training.

MQ15 Inspection System MIL-I-45208

The supplier's Inspection System shall provide and maintain a system that conforms to the requirements of MIL-I-45208, "Inspection System Requirements" or equivalent. Compliance with the provision of this clause in no way relieves the supplier of the final responsibility to furnish acceptable supplies or services as specified herein. The system shall be subject to audit by Mercury.

MQ 16 Quality System ISO 9001

The supplier's Quality System shall provide and maintain a system that conforms to the requirements of ISO 9001, "Quality Systems – Requirements". Compliance with the provision of this clause in no way relieves the supplier of the final responsibility to furnish acceptable supplies or services as specified herein. The system shall be subject to audit by Mercury.

MQ17 AGE / ENVIRONMENT SENSITIVE AND SHELF LIFE RESTRICTED ITEMS

Supplier shall identify all Items that have definite characteristics of quality degradation with age and / or environment. Supplier shall not deliver any Items with less than 80% of remaining shelf life. Supplier shall affix a label to each and all individual containers supplied with at least:

1. the date useful life was initiated
2. the date at which useful life will be expended
3. list of any and all required storage conditions to maintain stated useful life
4. any lot numbers or manufacturers identification numbers

Supplier shall establish a shelf life and storage control program to ensure that no material that has exceeded its shelf life can be used by Supplier in the assembly of Items for Mercury. Such a program shall include policies and procedures for:

1. Identifying and maintaining a database (a list) of all Items that have shelf life limitations and / or special storage requirements.
2. A receiving inspection process that can assure that all incoming Items are still within their shelf life limitation period.
3. A process for physically identifying, labeling, or coding each Item so that its shelf life can be readily determined and stating that the Item is under shelf life control.
4. A procedure(s) for reviewing (auditing) the status of all Items under shelf life controls both in stock and previously issued Items.
5. Identifying and tracking repackaged consumables. This shall include all appropriate information, such as part number, batch number, receiving information (for tracking), date opened, and expiration date.

Note: Repackaged consumables with shelf life(s) storage condition requirements, on which the status cannot be verified, shall be properly disposed of by Supplier.

MQ18 Calibration (System and Services)

CALIBRATION SYSTEM: Supplier shall have as a minimum, a documented inspection and calibration system that meets or exceeds the requirements of ANSI/NCSL Z540.3 current revision or ISO 17025. Supplier shall establish and maintain procedures that ensure that all equipment used for measuring, inspection and testing is controlled, calibrated, and traceable.

CALIBRATION SERVICES: The supplier of calibration services shall provide certification that such services were accomplished utilizing standards traceable to National Institute of Standards and Technology, been derived from accepted values of natural, physical constants or been derived by the ratio type of self-calibration techniques and their calibration system is compliant to ISO 17025 or ANSI Z540.3.

MQ19 Equipment Designated for Mercury Calibration Recall System

This clause applied to equipment that is purchased to perform an acceptance test of deliverable hardware or to measure/verify a process parameter as specified in a procedure used to manufacture deliverable hardware.

The supplier shall deliver the following information to Mercury:

- Identification of the calibration items and parameters.
- Certification of current calibration status of these items.
- Methods/Procedures for calibration of these items.
- Recommended calibration recall intervals for these items.

This information is subject to review and approval by the Mercury Calibration Organization prior to acceptance of equipment shipped under this clause.

MQ20 Inspection and Test Plan

The supplier shall prepare and maintain an inspection and test plan including a product flow chart of operation sequences, inspection and test points, and process control points for the items to be fabricated on this procurement document. Type of inspection or test at each point must be sufficiently described and identified.

One legible and reproducible copy of each instruction shall be submitted to the Mercury Supply Chain

for approval prior to the start of fabrication Changes to the approved Inspection and Test Plan shall be submitted to the Mercury Supply Chain for approval prior to incorporation.

MQ21 Configuration Management

The supplier shall employ a configuration management program to demonstrate that the purchased item conforms to controlled documentation. It is intended that the supplier implement only the degree and depth of configuration control necessary to establish approved baseline definition, control changes to the baseline, and record the status of the changes to ensure compatibility with the Mercury specification and applicable drawing. The supplier shall ensure adequate configuration management practices are in place at their subtler suppliers to ensure that part design, material, and processes do not change from original part design and procedures.

MQ22 Configuration Control – Custom Parts Only

Prior to the start of production, Mercury may review, at the supplier's site, all documentation to be used to produce the items described in the Mercury specification and/or source control drawing. This includes process documentation and inspection/test procedures. After review of the documents, a list will be established with the document titles and current revisions. The document list shall be submitted to the Mercury Supply Chain for approval. The documents on this list will be considered the baseline. Changes to any of the documents on this list must be submitted in writing to the Mercury Supply Chain for approval as follows:

Changes (changes that effect deliverable hardware form, fit or function): Proposed technical and manufacturing changes to the baseline shall be submitted for approval following establishment of the approved baseline. Proposed Class I changes shall be submitted to before action is taken to implement the changes with Mercury approval. Include a brief title of the proposed change, date, description, justification and impact.

Changes (changes not effecting deliverable hardware form, fit or function): Proposed changes shall be submitted to Mercury for classification concurrence following establishment of the approved baseline. The proposed change shall include a brief title of the proposed change and date, description, justification and impact.

MQ23 Life Requirements

Mercury engineering shall provide life requirements for procured components and subassemblies.

These requirements are derived from Mercury customer specification(s) and or sales contract(s). Suppliers will provide empirical data demonstrating life requirement conformance.

MQ24 Overseas Drop Ship Requirements

(to be added by buyers on PO through standard text)

Each Shipment overseas must include the following:

- Packing Slip
- Invoice
- Copy of actual Air Way Bill (AWB)

In addition to including the documents with the shipment, please e-mail all of the above to the appropriate Mercury buyer and Supplier. (refer to Drop Ship Procedure Letter) SCMP-024.

MQ25 United States Munitions List (22 C.F.R. 121.1)

(to be added by buyers on PO through standard text)

“The attached Technical Data/Software may be covered by the United States Munitions List (22 C.F.R. 121.1) under Category XI (d), any export/transfer/disclosure of the technical data to a foreign person, must be licensed by the Directorate of Defense Trade Controls, United States Department of State, prior to disclosure or transfer to the foreign person, whether in the United States or abroad.”

MQ26 Specialty Metals

(Applies only on shipments made to Mercury’s United States locations)

Compliance to DFAR 252.225-7009 “Preference for Domestic Specialty Metal” when providing any items containing specialty metals as listed in the document.

MQ27 Wafer Qualification

Where deemed necessary, Semiconductor samples will be evaluated at Mercury, and upon approval of the wafer qualification, a percentage of the wafer, (as defined by the Mercury Purchasing Department and the vendor) shall be reserved and held by the Supplier, for purchase.

MQ28 Pure Tin Prohibition/Tin Whisker Mitigation

Items shall comply with GEIA-STD-0005-2 unless otherwise specified on the Purchase Order, drawing, or other Mercury documentation.

Pure tin (>97% by volume) is unacceptable as a base material, coating, plating, or termination for any product procurement referencing this clause.

MQ29 GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM PROCESS (GIDEP)

Supplier shall implement a process for reviewing and evaluating problems identified in Government-Industry Data Exchange Program (GIDEP) Alerts. Supplier shall ensure that these Alerts do not adversely affect previous, current or future purchases / deliveries, and that new designs or redesigns and Supplier's Sub-tier sources consider relevant GIDEP information.

MQ30 Broker (Non-Franchised) Supplied Parts

Parts received on this order shall be screened as potential "Counterfeit Parts". Refer to Mercury's Counterfeit Risk Mitigation Procedure for further instructions. Please contact Mercury buyer for applicable Procedure. No parts should be supplied to Mercury without PRIOR written approval. See MQ1 section H, Counterfeit Mitigation.

MQ31 CONTROL OF MERCURY SUPPLIED MATERIALS

When materials are provided by Mercury to Supplier for incorporation into Items to be delivered by Supplier to Mercury in the performance of the Purchase Order, Supplier shall:

1. Inspect the materials immediately upon receipt for quality and quantity,
2. Supply written notification to Mercury of any discrepancies found during inspection or at any other time during the process,
3. Segregate such materials and withhold from use all materials found to be discrepant pending written authorization from Mercury,
4. Adequately identify all materials,
5. Control the materials at all time to prevent damage, mix-up or any otherwise detrimental condition,
6. Return all unused materials at end of the Purchase Order deliveries.

MQ32 ROHS COMPLIANCE

The supplier will ensure that the product identified on the Purchase Order is in full compliance with the Restriction of Hazardous Substances (RoHS) directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2002/95/EC. The directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment. RoHS is often referred to as the lead-

free directive, but it restricts the use of the following six substances: Lead (Pb), Mercury (Hg) Cadmium (Cd), Hexavalent chromium (Cr6+), Polybrominated biphenyls (PBB), Polybrominated diphenyl ether (PBDE). The Supplier shall include on their Certificate of Compliance the certification that the products procured under this Purchase Order, does NOT exceed maximum permitted concentrations of the specified substances measured in PPM by weight of homogeneous material as described by the RoHS directive.

MQ33: Requirements for PCB Fabs

Supplier shall follow the requirements as outlined in Mercury Systems special process document ISO-R4A: GENERAL REQUIREMENTS and SPECIFICATIONS for PRINTED CIRCUIT BOARD FABRICATION. The part drawing takes precedence for any specific fab requirements, which conflict with ISO-R4A.

Supplier shall provide the following documentation and deliverables with the boards upon shipment. Missing information or deliverables will result in the product being rejected at Receiving Inspection (see ISO-R4A, Section 7.5 Vendor Documentation and Deliverables):

A.) Certification that all boards have been manufactured to specification and the fabs respective drawings and to the extent of the governing documents referenced within ISO-R4A according to their respective precedence.

B.) Solder floated microsection test coupon cross-section and photomicrograph of the **smallest plated through via** for each unique date code, for through via technology designs.

C.) Solder floated microsection test coupon cross-section and photomicrograph of the **smallest blind via & & smallest buried via** for each unique date code, for blind & buried via technology designs.

D.) Two solder samples (minimum). These must be metrologically correct/accurate, but are not required to be electrically good. The number of solder samples may be increased from the minimum of two. Special requests will be stated/specified on the respective Purchase Order.

Solder Samples, ISO-R4A Section 6.2: The supplier shall furnish Mercury with an appropriately identified solder-sample board (complete with solder mask and applicable surface finish) for every lot delivered. Two solder samples are requested for the initial build of a board for process validation. If the lot contains more than one (1) date code, then a solder- sample board for each date code is required. The board sample must have been processed concurrently with the submitted lot. If the board is supplied to Mercury in a multi-up configuration (i.e., in a panelized format), then one complete panel must be supplied as a solder sample. The solder sample(s) shall be placed in the shipping box on top of the other boards. If there is more than one (1) box involved in the shipment, the solder sample should be placed in the first box (box #1). Solder sample boards may be rejects of the current fabrication process for any reason other than solderability.

E.) Electrical Test Certificate of Compliance

F.) Metallographic Report stating surface finish thicknesses.

G.) Cross-Section Report. The detailed cross-section report shall contain, and specify, the measured attributes of finished copper for each layer and the measured dielectric thickness between each layer based on the respective micro-section. This report will state the minimum, maximum, and average copper thickness in the PTH barrel (hole wall), as well as the average (measured) thickness of copper on the surface and at the knee of the respective PTH, as micro-sectioned. In addition, this report will state the minimum, maximum, and average copper thickness in the blind, buried, or buried through via barrel (hole wall), for those designs that have this via technology.

When Applicable:

H.) For Controlled Impedance PCBs: the fabricator shall supply the TDR readings for each controlled impedance layer on a minimum of 2 boards and 2 coupons from each date code.

AS9102 First Article Inspection (FAI), ISO-R4A Section 7.6 First Article Inspection and Quality Documents First Article Inspection is required to follow the AS9102 format and requirements. The results of each FAI shall be provided with the shipment and kept on-site for retention by the Supplier for the specified contractual timeframe. The FAI shall include a visual and mechanical validation that the PCB's are compliant to the Mercury drawing package and specifications in accordance with the AS9102. Reference Mercury Quality Note MQ13, Supplier First Article Inspection AS9102.

Inspection Level, ISO-R4A Section 6.1: Inspection is required to MIL-STD-1916 with 1% AQL, 100% inspection, or a sampling plan that has been agreed to formally by Mercury and the supplier. A sampling plan for IPC-6012 may also be utilized based on table 4-2 Class 3. Inspection plan shall be used to insure that all boards meet the requirements of the drawing and ISO-R4A specification. Acceptable quality as defined by IPC-A-600 is adequate, by default, for any requirements, which are not specified.

Process Changes, ISO-R4A Section 6.1: During such instances when a manufacturer changes its process and/or method of manufacture (and the previous process only has been accepted), the method of manufacturing Mercury product shall not be changed without prior written approval. Any significant process change shall include the appropriate testing and convey the process change in writing to Mercury Systems, Inc. At least 30 days in advance. Reference Mercury Quality Note MQ1-C, Change Notification.

Cleanliness, ISO-R4A Section 6.1.1:

Boards shall be free from dirt, lint, fibers, adhesive tape residue, and other particulate and film contaminants. In addition, finished boards shall not exceed 6.5 micrograms of NaCl equivalents/square inch when measured by an Alpha 500 Ionograph (or equivalent).

Revision History:

Revision	Date	Case #	Reason
01	12/29/2016	463	Initial Release
02	01/30/2018	890	Augment Counterfeit and AS9100 Rev D Personal Awareness, and COTS requirements
03	01/03/2019	1089	Add Qnote MQ33 Requirements for PCB Fabs

Document Description

Number: ISO-QM0

Purpose: Mercury Systems, Inc. quality notes to meet customer contractual flow down requirements to the Mercury Systems supply base. These are corporate level supplier quality flow downs. Codes defined in Oracle will allow for the Quality note number to be printed automatically on the PO by commodity.

Reviewers: Quality Functional Staff

Approved by: Sr. Dir. Mission Assurance

Effective Date: 01/03/2019 **Last Review Date:** 01/03/2019