

	Experi-Metal Inc. 6385 Wall Street Sterling Heights, MI 48312	SUPPLIER QUALITY MANUAL	DOC: EMI REV: Rel 1/5/19
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APPROVALS:	
	
SUPPLIER QUALITY ENGINEERING	ENGINEERING MANAGER
	
MATERIAL SUPPLY CHAIN	OPERATIONS MANAGER

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SUPPLIER QUALITY REQUIREMENTS

RECORD OF REVISIONS

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SUPPLIER QUALITY REQUIREMENTS

SECTION 1

Purchase Order Supplement

GENERAL REQUIREMENTS FOR AEROSPACE SUPPLIERS

1.0 PURPOSE

This document establishes EMI quality system requirements for all suppliers when listed on the purchase order issued by EMI. All written and oral communications with the supplier as well as the supplier's specifications, procedures, and reports shall be in English.

2.0 APPLICABILITY

This SUPPLIER MANUAL will be identified as a purchase order requirement on all EMI purchase orders when procuring products for EMI aerospace/defense customers. Suppliers will be responsible for implementing all the requirements of Section 1 and any listed PQA codes (from Section 2) stated in their purchase order. The supplier shall flow down these requirements to sub-tier suppliers when they are used. Acceptance by EMI auditor, source-inspector, receiving-inspector, engineer, or any other representative of EMI does not relieve the supplier of their responsibility to furnish products or services that conform to all purchase order requirements. In the event that the purchase order conflicts with the requirements of this document, the purchase order will supersede this document.

3.0 DEFINITIONS

Group 1: Functional Hardware that cannot be verified at EMI.

Group 2: Unless otherwise stated on the purchase order, product made to EMI drawings or EMI's customer drawings or specifications that are not Group 1.

Group 3: Standard and/or catalog components (NAS, MS, etc.).

Supplier: The seller to EMI who provides a product or service in accordance with purchase order agreement.

Subtier Supplier: A direct supplier to EMI's supplier.

EMI: A buyer and/or representative of EMI, otherwise known as the buyer.

Purchasing Agent: An agent of EMI authorized to negotiate and issue contracts on behalf of EMI.

Purchase Order: A contract between EMI (buyer) and its supplier (seller) for the procurement of products or services.

Procurement Quality Assurance (PQA): EMI PQA Codes.

Outside Process Manufacturing Planning (THE EMI PROCESS SKETCH):
EMI THE EMI PROCESS SKETCH.

Key Control Characteristics (KCC): An attribute or feature whose variation has a significant effect on product fit, form, function, performance, service life, or producibility that requires specific actions for the purpose of controlling variance as identified on the Engineering drawing or the EMI process sketch.

Vendor Material Review Record (VMRR) is a request from supplier to EMI for material review disposition.

4.1 GENERAL REQUIREMENTS

IMPORTANT: EMI's Purchase Order number must appear on all invoices, shipping papers, containers & correspondence. Goods are subject to EMI's inspection and approval. If shipment will be delayed for any reason, the supplier must advise EMI's buyer immediately, stating all the necessary facts. To avoid errors, review specifications and requirements carefully and if unable to complete orders as written the supplier must notify EMI promptly.

Upon acceptance of an order, the supplier agrees to all the requirements that are applicable as stated in this Supplier Manual. Suppliers are responsible to apply document control when a new revision of the manual is received. If the document is not available on the EMI website, then consider the last hard copy sent by the buyer as the latest revision level.

Supplier Quality Management System Requirements

All EMI suppliers and supplier candidates must demonstrate compliance to the following quality standards, as applicable: Exceptions will be identified in EMI's Approved Supplier List:

- **AS 9100:** Manufacturers
- **AS 9120:** Distributors.
- **NADCAP:** Special Processors.
- **ANSI/NCSL-Z540.3 or IEC/ISO17025:** Calibration Laboratories

4.2 EMI's Special Processor Definition

Any of the processes listed below that are performed in accordance with an applicable specification (Military, AMS, ESS, etc.) are defined as special processes and requires NADCAP accreditation except where noted:

- Welding (fusion welding, electron beam welding, laser welding, resistance welding, torch and induction brazing, and furnace brazing)
- Soldering (NADCAP accreditation is not required, EMI approved only)
- Chemical Processing (etching, chemical milling, chemical film, passivation, plating, and anodizing)
- Heat Treating (normalizing, solution heat treating, nitriding, annealing, stress relieving, hardening, tempering, and carburizing)
- Non-Destructive Testing (i.e., penetrant, magnetic particle, ultrasonic, or radiographic)
- Testing (metallurgical, chemical)
- Surface Enhancement (shot peen)
- Electrical Discharge Machining (NADCAP accreditation is not required, EMI approval only).

4.3 Quality System Status

The Supplier shall notify EMI regarding any change of certification status within 48 hours (including failing an audit).

Changes in the supplier's management, ownership, location/address, and/or quality system may require EMI quality re-approval. It is the responsibility of the Supplier to provide to EMI Supplier Quality Engineering a written statement of any of these changes within (30) days of change.

4.4 Source Inspection

The supplier is responsible for meeting all purchase order requirements including the requirements of this document. When a supplier's performance fails to comply with specified requirements, EMI may impose source inspection at the supplier's facility at the supplier's expense. EMI reserves the right to debit the supplier's account to compensate for EMI inspection or related activities that take place as a result of a supplier's lack of performance, or capability to supply conforming product or services. Source inspection may also be part of a contract as a EMI customer requirement and in this case the same applies if imposed due to failing to comply. If EMI customer source inspection is required the PO will reflect this requirement.

4.5 Approved Source List

Unless otherwise specified on the purchase order, suppliers listed in EMI's ASL may subcontract work to their approved suppliers for Group 1, Group 2 and Group 3 items, and are fully responsible for the control of those suppliers, including flow down of the applicable requirements from EMI's purchasing documents, including critical items and key characteristics where required. Sub-tier suppliers who are performing special processes for Group 1 and Group 2 must be NADCAP approved or on EMI's customers' ASL. Contact EMI Buyer if approved sources are not defined on the order or if approved suppliers are not available. Sub-tier suppliers may not subcontract any EMI works to their suppliers. Suppliers or sub-tiers providing Group 3 hardware are exempt from the NADCAP or EMI approved special processors requirement.

4.6 Right of Access

The supplier shall grant EMI, its customers, and regulatory authorities the right of access to applicable

areas of all facilities at any level of the supply chain involved in the order and to all applicable records. The supplier shall flow down this right of access clause to all sub-tier and raw material suppliers through the supplier's purchasing system.

4.7 Working with Specifications

When specifications are called out on drawings, the EMI process sketch, or the purchase order (PO), the supplier must ensure they are working to the correct specifications and revisions. Revisions are in effect at the time of PO issuance. If the spec cannot be met contact EMI for resolution.

4.8.1 Source of Specification Control Designed Articles

All items controlled by a Source Control Drawing or Specification Control Drawing, (SCD) utilizing the supplier's designed article shall be of the configuration depicted and described on the SCD. The supplier shall not make any changes to their design that conflicts or violates any of the requirements of the SCD without obtaining EMI's engineering approval. Any change to the supplier's design, materials, processes, suppliers, or facilities for an SCD item requires a formal written notification to EMI's Purchasing Agent. Suppliers that are providing purchased items to an SCD may utilize their own approved sources except for special processes called out by specification number on the SCD, in which case the supplier must use the EMI's customers ASL or NADCAP Approved Sources.

EMI Review of Supplier Documentation: The supplier shall make all drawings, associated lists, and other engineering documentation establishing the configuration design of the purchased item, available for buyer review and approval at seller's facility when directed by EMI buyer.

4.8.2 No Change Clause

Seller shall make no change in design, materials, manufacturing location, manufacturing processes, or sources of supply, after buyer's acceptance of the first production test item or after acceptance of the first completed end item, without the written approval.

4.8.3 Delivery Documentation

The supplier shall provide all certifications and test data as required by the PQA codes listed on the purchase order or the EMI process sketch. All certifications and test data shall be in the English language stating the acceptance for each item delivered in accordance with the purchase order/contract. The documentation shall be submitted electronically into EMI's documentation portal prior to shipment unless alternate method approved by EMI. A certification of conformance must be submitted with every shipment and be signed by the supplier's quality representative who can attest to the conformance of the articles and shall include the signatory's title and date. This does not preclude the use of electronic stamps or signatures and, therefore, EMI, will allow electronic stamps and signatures from its suppliers on certifications.

It is the supplier's responsibility to assure that special processes are performed by EMI's Customers' approved sources.

The Certificate of Conformance shall include the following information:

4.8.3.1 EMI purchase order.

4.8.3.2 Part number and revision as listed on the PO.

4.8.3.3 EMI part number and revision.

4.8.3.4 Quantity shipped.

4.8.3.5 Supplier's name.

4.8.3.6 Supplier's address.

4.8.3.7 Statement of conformance attesting to the conformance of the article(s).

4.8.3.8 DFAR statement per paragraph 4.20 (when specialty metals apply).

4.8.3.9 Serial numbers (when required by drawing, may be on test data).

4.8.3.10 Manufacturer's name and lot date code (if applicable) for purchased components.

4.9 Latent Defect Reporting

In the event a condition is discovered that affects previously delivered product, the supplier shall notify EMI of the condition within 48 hours of discovery. Notification shall be in the form of a letter addressed to the attention of EMI Supplier Quality Engineering. The letter must include all pertinent information concerning the condition (i.e., part numbers, serial numbers, quantities, time frame, description of condition), and the corrective action taken to prevent recurrence.

4.10 Material Review Submittals, Deviations Waivers, Work transfers

Suppliers must comply to all purchase order requirements, including any document, specification, sketch, drawing, standard, instruction, or quality codes specified in the purchase order. A supplier may request approval to waiver from the requirements of the purchase order or deviate from those requirements prior to product realization. No transfers of work shall take place unless approved by EMI engineering.

4.11 Vendor Material Review Records

Any request for material review action for nonconforming product on a EMI order must be submitted to EMI Supplier Quality Manager. Only when a supplier has obtained a disposition via a Non-Conforming form from EMI with a disposition that allows the supplier to ship the product to EMI. The supplier shall reference the Non-Conforming form number on the Certificate of Conformance document. The request must be accompanied with a corrective action.

4.12 Change Request (ECR)

To request a change to a EMI drawing or specification requirement, the supplier may submit an Engineering Change Request (**ECR**) that can be submitted to EMI Engineering through the Purchasing Agent. Only when the ECR is approved by Engineering, and with a corresponding purchase order change notice reflecting the change, the supplier may ship the product to EMI. The ECR form and instructions may be obtained by contacting EMI buyer.

Approval of ECR's will be contractually binding through a Purchase Order Change, which reflects the requested change (e.g., PQA Codes, Engineering drawing revision).

4.13 Quality Records

The supplier shall establish and maintain a record-retention system that will ensure quality records are retained for a minimum of 15 years and 40 years for space/flight safety, critical/major rotor parts after product shipment (unless otherwise specified on the PO). All test records shall be maintained for a minimum of 20 years. Prior to discarding any quality record, the supplier shall contact EMI's Quality Manager and obtain written approval.

4.14 Conformity Requirements

Requirements for FAA conformity will be communicated through EMI Purchase Orders.

4.15 Age Sensitive, Life-limited Parts

Parts shall be segregated by manufacturing lot/cure date when shipped to EMI. Suppliers must provide product to EMI with at least 25% remaining shelf life or as directed in PO.

Each container shall be labeled with part-number, revision, part name, quantity, manufacturer name, manufacture date code, lot or batch number, cure/mix date and expiration date.

Suppliers shall ensure that there is a FIFO system and a procedure in place to control and document the temperature storage conditions and shelf life requirements for applicable materials.

4.16 Code of Conduct

Suppliers are required to abide by GKN Aerospace Code of Conduct which is available their website.

4.17 Non-deliverable Software Quality Control

The supplier shall provide for records and procedures which control configuration and accuracy of software used to manufacture, test, or inspect product. Software may include, but is not limited to, machine control data, CAD/CAM models, N/C tapes or other computer-aided software to control production, test, or inspection related processes. The supplier shall maintain records of test or inspection data verifying accuracy of software, revision control, and appropriate software security.

4.18 Control of EMI Supplied Product and Tools

- Product Control: The supplier shall establish and maintain a documented procedure to identify, store, control, account for inventory balance, and maintain EMI supplied material or articles that are provided for the supplier to incorporate into EMI procured articles. Any such product that is lost, damaged, or is otherwise unsuitable for use shall be recorded per the supplier's internal procedure and submitted to EMI.
- Excess EMI Furnished Material: The supplier shall contact the Purchasing Agent to obtain disposition instructions for excess EMI furnished material.
- Certification of EMI Furnished Material: Strict accountability of the material furnished for this order must be maintained. A certification stating that the parts were manufactured from the material furnished by EMI is required.
- Tool Control: The supplier is responsible for proper storage, control, monitoring for life, and handling of EMI tools as well as protection against damage or affects from the environment. The supplier also is responsible to maintain the identification and whereabouts of the tools, as appropriate, to assure its intended use and recall when needed.
- Notification of Tooling Condition: The supplier shall advise EMI Purchasing and Procurement Quality Assurance in writing when the condition of the tool is worn or damaged such that it may affect the ability to produce conforming product. The supplier must advise EMI purchasing with sufficient time in advance to allow EMI to disposition the tool by repair or replacement and assure continuity of part supply without the need for deviation from specifications
- Batch Management and First-in-First-out (FIFO): Supplier will maintain positive control, segregation, and identification of furnished material to be incorporated into procured articles that include EMI assigned batch numbers. The supplier will use product in a FIFO sequence and report to EMI in their shipping paperwork the EMI assigned batch numbers that were used in the manufacture of the procured articles.

4.19 Direct Shipment to Customers

EMI does not allow any supplier to "Direct Ship" to customers. All shipments must be shipped to EMI to

be processed through EMI's quality system. It is the supplier's responsibility to contact the Purchasing Agent for a written authorization for exception to this rule prior to making any customer direct shipment.

4.20 Submission of Electrical Discharge Machining (EDM) or Other Metallurgical Test Specimens

EDM is prohibited on EMI design detail parts unless specified on the drawing and approved by EMI in accordance with ESS008. Unless otherwise specified on the purchase order, all metallurgical lab samples required to be submitted to EMI for approval prior to processing must be submitted to the Purchasing Agent identified on the purchase order. The Purchasing Agent will forward the samples to the metallurgical lab and return the results to the supplier.

4.21 Preservation, Packaging, and Shipment

Unless otherwise specified on the purchase order, the supplier shall incorporate good commercial standard practices for the preservation, packaging, and shipment to preclude damage to products, with not metal to metal contact during shipment to EMI or deterioration while in storage at EMI. Identification on packages shall include the PO number and line item to which they apply. Use of staples paper clips, or other potential foreign object debris (FOD) is prohibited in the part direct packaging.

4.22 Foreign Object Damage/Debris and Counterfeit Parts Avoidance

Unless otherwise specified on the purchase order, the supplier shall establish and maintain a Foreign Object Damage (FOD) and Counterfeit Parts Avoidance programs that meets the requirements for aerospace applications.

4.23 Anodize Touch-up Requirements

Brush chemical film touch-up of Type I and Type II anodized surfaces (MIL-A-8625) per MIL-DTL-5541 CL-1A is authorized to all EMI suppliers with the following additions/limitations:

- Only small or minor areas may be brush chemical filmed and is limited to 5% of the total surface area. Touch-up shall apply only to in advert mechanical damage such as scratch marks. Touch-up does not apply to dimensional errors that require re-machining.
- Parts must be completely cleaned per MIL-DTL-5541, paragraph 3.2 before alodine application.
- Only qualified pre-mixed solutions are authorized per MIL-DTL-5541, CL-1A, Type III, and QPL-81706 (Alodine 1201 or equivalent). The residual solution is to be disposed of per applicable Material Safety Data Sheets (MSDS), manufacturer's instructions, and state and federal requirements.
- No salt spray testing required if performed to all of the above requirements and specifications.
- Supplier must comply with all other specifications of MIL-DTL-5541 not defined above.
- Parts processed as specified above shall meet all requirements of MIL-A-8625 and MIL-DTL-5541.

4.25 Specialty Metals

When the end customer is the US government/military, any specialty metals, incorporated in articles delivered under a EMI purchase order, shall be subject to DFARS 252.225.7014 Restriction on Acquisition of Specialty Metals and DFARS 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals.

This clause does not apply to Specialty Metals melted in a qualifying country (as defined in DFARS 225.872-1) or incorporated in an article manufactured in a qualifying country. The supplier shall insert the substance of this clause in all their purchase orders to their sub-tier sources where specialty metals applies.

The following Specialty Metals (DFARS) certifications are required:

CONTROLLED DOCUMENT ON EMI WEBSITE @ www.experi-metal.com

- **Assembly Suppliers:** The supplier's certification of conformance must state: "All specialty metals contained in the product being shipped conform to the DFARS requirements". Supplier must maintain the actual mill certifications at their facility.
- **Detail Parts and Standard Hardware Suppliers:** A copy of the mill material certification must state the melt source and be sent in with each shipment of the product containing Specialty Metals.

4.26 Procurement of Castings and Forgings

Suppliers must demonstrate a successful quality management system for managing their sub-tier sources and for inspection and testing of castings and forgings to obtain approval to procure these items for EMI or EMI's customers. The supplier shall not procure castings or forgings unless process approval to do so is granted by EMI Buyer and assure these are purchased by an approved source.

4.27 Country of Origin

Commercially Available Off-the-Shelf Items, domestic end product, qualifying country end product, and foreign end product, as referenced in this paragraph, are defined as per DFARS 252.225-7001 Buy American Act and Balance of Payments Program.

If the item supplied does not qualify as a Commercially Available Off-the-Shelf Item (COTS), the supplier must include one of the following two statements in their quote and on their Certificates of Conformance:

- Use the following statement if the item qualifies as a domestic end product or qualifying country end product, even if PQA code 35 is applied to the item:

"The offeror certifies that the following end products are domestic end products or qualifying country end products. The country of origin is_____."

- PQA code 35 must be applied to an item to use the below statement on the Certificate of Conformance. PQA code 35 will be added to an item as a result of the inclusion of the statement below in the offeror's quote and acceptance by the buyer. Use the following statement if the item does NOT qualify as a domestic end product or qualifying country end product (enter "unknown" if the country of origin is not known):

"The following end products are other foreign end products, including end products manufactured in the United States that do not qualify as domestic end products. The country of origin is _____."

4.28 First Article Inspection (AS9102)

The supplier shall perform a First Article (FAI) and submit the First Article Inspection (FAIR) with delivery of product in accordance with the requirements of AS9102, current revision and as directed in the PO. First Articles for castings, forgings, and molded products also shall be in conformance with EMI's customers' current applicable requirements. FAIR is not required with each shipment.

The supplier shall flow this requirement to their sub-tier sources.

Individuals performing Visual Inspections (calibration, non-weld, in-process, layout, dimensional) must have eye examination tested at least once a year and be compliant with near vision Snellen 14/18, (20/30), or Jaeger 2. Visual weld inspectors must be compliant to AWS17.1, NDT inspectors must be compliant to AIA/NAS 410.

4.29 Corrective Action

Corrective actions, when requested by EMI, shall be responded to in a manner that complies with AS9100 standards and shall be documented on EMI corrective action forms or other forms that contain the same info as EMI's CA form.

4.30 Supplier Charge Back Policy – Agreement

EMI will issue a \$160 administrative cost charge back for each quality incident. Rework of defective material that is deemed necessary to be completed on site at EMI will be charged back to the supplier at a rate of \$80 per hour. EMI reserves the right to charge back to the supplier the cost of product that is determined to be scrap and not re-workable. The cost is calculated by using the EMI “Visual” system and is the sum of material, outside processing and value added up to the process point where the parts are determined to be scrap.

SECTION 2

Purchase Order Supplement

PROCUREMENT QUALITY ASSURANCE CODES FOR SUPPLIERS

The following **PQA Codes** apply when specified in EMI's purchase order:

- 1. Source Inspection**
Source Inspection is applicable to this order which requires a EMI Inspection Representative and/or EMI Customers' Representatives to inspect the product for approval prior to shipment. Please contact EMI Supplier Quality to request source inspection at your facility 3 to 5 days prior to the product being ready for inspection. Acceptance of product by EMI Source Inspection shall not relieve the supplier from their responsibility to furnish products that meet all purchase order requirements.
- 2. Government Inspection**
During performance on this order, your quality control or inspection system and manufacturing processes are subject to review, verification, and analysis by authorized Government representatives. Government inspection for release of product prior to shipment is not required unless you are otherwise notified. You shall provide a copy of this order to your Government representative upon his request.
- 3. Government Source Inspection (DOD)**
Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government representative who normally services your plant so that appropriate planning for Government inspection can be accomplished. On receipt of this order, promptly furnish a copy to the Government representative who normally services your plant, or if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency Inspection office. In the event the representative or office cannot be located, our Purchasing Agent should be notified immediately.
- 4. Government Inspection (NASA)**
The Government has the right to inspect any or all of the work included in this order at the supplier's plant.
- 5. Government Source Inspection (GSI) (NASA)**
All work on this order is subject to inspection and test by the Government at any time and place. The Government quality representative who has been delegated NASA quality assurance functions on this procurement shall be notified immediately upon receipt of this order. The Government representative shall also be notified forty-eight (48) hours in advance of the time articles or materials are ready for inspection or test.
- 6. Certificate of Conformity**
Each shipment must be accompanied by one (1) legible and reproducible copy of a Certificate of Conformity, which conforms to the Delivery Documentation requirements of Section 1 of this document. The certification must state that the material meets the applicable requirements specified in the purchase order
- 7. Raw Material Certification**

The supplier shall comply with the requirements of AS6174 (Counterfeit Materials). Each shipment shall be accompanied by one (1) legible and reproducible copy of the following:

- a. Original Mill certification (including chemical & physical test results).
- b. Distributor certification of conformance (CoC) documenting chain of custody/traceability from the Mill to EMI.

The mill and distributor certifications shall indicate the name and address of applicable specifications and revisions.

Suppliers of components or raw materials shall have traceability for all raw materials throughout their manufacturing process, inventory/storage points, and within all levels of supply chain back to the original source.

7A. DFAR Specialty Metals Requirement

This PO supports Government Contract, the prime contract number is available from the EMI Buyer or identified on the PO. DFARs compliant material is required.

7B. Non-Domestic Raw Metallic Material

(This clause is over and above the requirements of Specialty Metals. It is applicable to all raw metallic material purchased from a non-domestic source.)

Raw metallic material produced in foreign countries must be tested for compliance to the material specification.

Supplier must have an established periodic raw material independent testing process (i.e., annual oversight program) that validates raw material and the accompanying certifications. (The material validation process must be documented and evidence of compliance must be made available to EMI upon request within 10 working days or sooner from date of request.)

7C. DPAS Rated Order Requirement

This PO supports Government Contract, the prime contract number is available from the EMI Buyer. This is a DPAS rated order the rating for this order is available from the EMI buyer or identified on the PO. Any person who places or receives a rated order should be thoroughly familiar with, and must comply with the provisions of 15 CFR 700 <http://www.ecfr.gov> DPAS training material is available from the EMI Buyer.

8. Independent Lab Analysis

In addition to other certifications required by this purchase order, an independent lab analysis to the applicable specification by a EMI or NADCAP approved supplier is required on the raw Material supplied under this order.

9. Lot Control First Article Inspection

The supplier shall perform a First Article Inspection (FAI) for each production lot in accordance with the requirements of AS9102, current revision. The supplier shall furnish a copy of the completed First Article Inspection results in a format that is compliant with AS9102 for each shipment to EMI.

10. (Reserved)

11. (Reserved)

12. Material or Process Verification Sample

One (1) additional part of a suitable test bars of the same material lot and processed with the parts

supplied is required for verification tests. This sample shall be identified as a test sample with permanent identification.

13. Customer Required Special Process Subtier Approval

Special processes such as surface treatments, heat treating, welding, and nondestructive testing required for completion of this order shall be performed only by processors approved for the process by the applicable Customer of EMI. For the names of Customer approved sources, call the EMI Purchasing Department.

14. Material Traceability, Identification, and Control

The supplier must provide positive traceability by linking all documentation (e.g., shipper, test report, process certification) together with the supplier's unique traceable number (e.g., job number, work order number, sales order number). As an option, the supplier may complete EMI's provided form which can be requested from EMI's purchasing agent and provide a copy with each shipment.

15. Traceability

Certification must accompany material showing date of manufacture and heat number, batch number or lot number. Each lot of parts must be kept separate and is not to be intermixed with subsequent lots of the same parts. Traceability identification and retention requirements of suppliers and supplier's subtier source shall be in accordance with EMI's customer's requirements and shall flow down to subtier sources as applicable.

16. (Reserved)

17. (Reserved)

18. Mercury Free Certification

Certification is required that material supplied has not been in contact with, or exposed to, Mercury in any form.

19. Process Certification

Each shipment must be accompanied by one (1) legible and reproducible copy of a process certificate of conformance complying with delivery documentation requirements of Section 1 of this document.

The process certificate of conformance must include:

- Process specification and revision
- Grade, Type, Class. etc. (as called out on the drawing)
- Protective atmosphere used, vacuum, etc. (heat treatment)
- Thickness (plating)
- Signature/stamp and date of a supplier representative.

Traceability to the manufacturing documentation must be maintained throughout the processing documentation. Traceability may be by serial number, work order, batch number, or other means as long as parts can be tracked back to the related manufacturing documentation.

NOTE: Non-Destructive Test (NDT) findings shall be reported on an appropriate form. For radiographic inspection, the X-ray film and two (2) legible and reproducible copies of the report must accompany the material. Radiographic reports shall be accompanied by a shooting sketch and the exposed film.

A list of PQA subcodes:

19A	Anodize
19B	Braze
19C	Cadmium Plate
19D	Carburizing
19E	Chem Film
19F	Chrome Plate
19G	Cold Stabilization
19H	Copper Plate
19J	Electropolish
19K	Gold Plate
19L	Heat Treat
19M	Impregnation
19N	Magnetic Particle Inspection
19P	Nickel Plate
19Q	Nital Etch
19R	Nitriding
19S	Paint
19T	Passivation
19U	Penetrant Inspection
19V	Phosphate Coating
19W	Plasma Coating
19X	Radiographic Inspection
19Y	Shot Peen
19Z	Silver Plate
19AA	Solder
19AB	Solid Film Lube
19AC	Stabilize
19AD	Stress Relief
19AE	Tin Plate
19AF	Ultrasonic inspection
19AG	Weld
19AH	Zinc Plate

20. Functional Test Reports

Each shipment must be accompanied by one (1) legible and reproducible copy of actual test results as part of the data package, and one (1) legible and reproducible copy attached to or packaged with the device. Data must be suitably protected to prevent oil or fluid contamination. These reports must contain the Test Stamp and Inspection Stamp of the individual performing the task, or the signature and title of the authorized representative of the agency performing the test and must assure conformance to specified requirements. (NOTE: Functional tests are defined as operational inspection [e.g., Mechanical, Electronic, Hydraulic].)

20A. Functional Test Reports (Data Package Only)

Each shipment must be accompanied by one (1) copy of the function test report/data sheet as part of the supplier's data package.

The function test report/data sheet must contain the following:

- Actual test results
- Test parameters
- Serial Number and/or lot number of part being tested, if applicable
- Signature/stamp and date of a supplier representative.

NOTE: Functional tests are defined as operational inspection (e.g., Mechanical, Electronic, Hydraulic).

20B. Functional Test Reports (Data Package and Individually Attached to Parts)

Each shipment must be accompanied by two (2) copies of the functional test report/data sheet. One (1) copy of the functional test report/data sheet must be included in the supplier's data package. The other copy of the functional test report/data sheet must be individually attached or packaged with each part.

The functional test report/data sheet individually attached or packaged with each part must be protected from damage (i.e., oil, abrasion).

The functional test report/data sheet must contain the following:

- Actual test results
- Test parameters
- Serial Number and/or lot number of part being tested (If applicable)
- Signature/stamp and date of a supplier representative.

NOTE: Functional tests are defined as operational inspection (e.g., Mechanical, Electronic, Hydraulic).

21. Moved to Section 1, para. 4.24.

22. (Reserved)

23. SAE J429 Grade 5 and 8 Fasteners

Certification for the grade of bolt being supplied must accompany each shipment. The certification must include (as applicable) the complete chemical composition, hardness measurement readings, plating requirement results, tensile test values, identity of the Manufacturer's Logo (logo must be registered with the Defense Industrial Supply Center), and Country of Manufacture.

24. Reserved.

25. Source Controlled Items – Manufacturer

Supplier shall not make a change in design, materials, suppliers, manufacturing facilities, or processes specifically controlled by the Buyer's drawing or specification without prior notification to and written approval from the buyer. Seller shall have a formal method for verifying and identifying which Buyer approved changes are incorporated into engineering documents and hardware. Seller also shall notify the Buyer of any change in design, materials, suppliers, manufacturing facilities, or processes not controlled by the Buyer's drawing or specification prior to shipment of the changed articles.

26. Source Controlled Items – Distributor

The supplier shall notify the Purchasing Agent of any change in design, materials, suppliers, or processes specifically controlled by the drawing or specification prior to acceptance of purchase order.

27. ATP/Drawing Approval

EMI shall approve supplier's Acceptance Test Procedure (ATP), top assembly drawing and parts list. The supplier shall furnish a copy of the approval documentation to EMI with the first shipment.

28. (Reserved) See Section 1, para. 4.7.1

29. Drawing Baseline

The supplier shall submit to the Buyer three (3) copies of all drawings, associated lists, and other engineering documentation establishing the configuration design of the purchased item. Revisions shall be submitted upon release.

30. Concurrence of Class I Major Changes and Class II Minor Changes

All (Class I) major changes, as defined in ANSI/EIA-649-A must be submitted to the Buyer in writing (and approved by EMI Engineering) prior to shipment of product. All (Class II) minor changes shall be submitted to the Buyer for concurrence of classification. Major changes to product identified after the fact require submission to the Buyer for review and approval prior to shipment of the product.

31. (Reserved)

32. Control of Key Control Characteristics

Key Control Characteristic (KCC) dimensions or features specified on engineering drawings or THE EMI PROCESS SKETCH must be tightly controlled for variation per AS9103.

Suppliers shall provide evidence of Process Capability Index (Cpk) of 1.33 or higher on specified dimensions or features. Otherwise, these dimensions or features must be 100% inspected by the supplier.

33. Frozen Planning

Prior to first shipment, all planning utilized in the manufacture of this part shall be submitted to the EMI buyer for approval. EMI will review and approve the planning. The planning will be stamped with a Frozen Planning Acceptance Stamp. After the planning has been frozen, no changes shall be made to the planning until approved by the planning review board. EMI will retain a copy on file and the original Frozen Planning will be returned to the Supplier.

34. Frozen Planning

Prior to the start of parts manufacturing, all planning to be utilized in the manufacture of these parts shall be approved by the EMI Planning Review Board (PRB). All supplier and sub-tier supplier planning shall be submitted to the Purchasing Agent for review and approval by the EMI PRB. Approved planning will be frozen and stamped with a Frozen Planning Acceptance Stamp and signed by members of the Planning Review Board at EMI. After the planning has been frozen, no changes shall be made to the planning, materials or parts manufacturing sequence until approved by the EMI planning review board. EMI will retain a copy on file and the original Frozen Planning will be returned to the Supplier.

35. Country of Origin Statement

This item is not required to qualify as a domestic end product or qualifying country end product as defined by DFARS 252.225-7001 Buy American Act and Balance of Payments Program. The supplier must still include the Country of Origin statement.

36. Customer Specific Requirements UTAS:

When the PO states "UTC End User", all applicable UTAS/Collins (United Technologies) ASQR-01, HMS19, HMS17, HMS236 requirements as applicable, are flow-down to the EMI supplier. ASQR-01 takes precedence over any conflicting requirements. The latest revision of the Quality Requirements are supplied by the EMI buyer. ASQR- 01 Form 1 should be utilized by the suppliers to preform internal audits of the applicable ASQR-01 requirements for compliance. This is available through EMI buyer or Quality Manager. Specifications are available via the UTAS website or through the EMI Buyer.

37. Customer Specific Requirements Pratt & Whitney Canada:

When the PO states "Pratt & Whitney Canada End User", all applicable P&WC SQOP 01-01 General Requirements apply to the order as applicable. SQOP 01-01 takes precedence over any conflicting requirements. The latest revision of the Quality Requirements are available at the supplier portal or by contacting the EMI buyer. Supplier shall comply with all P&WC standards and specifications, including but not limited to CPW40, as applicable. Such standards may be updated from time to time. CPW2000 applies for goods with Hamilton Sundstrand (UTAS) Specifications with the revision letter, applicable to the order. Refer to RSI (Revision Status Index) for applicable CPW2000 Rev. Letter.