



Supplier Quality Manual
PG-PL-006

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2 Purpose

2.1 The purpose of this Manual is to clearly define all the applicable Supplier Quality flow down requirements and performance expectations that suppliers must meet to remain active on Cascade Aerospace’s Approved Suppliers list. All suppliers providing parts, materials, and services to Cascade Aerospace must review and be knowledgeable of the contents of this document, and are accountable for ensuring the implementation, where required, into their company.

3 Scope

3.1 The table below defines which Quality clauses apply to each class of supplier.

Table 1 – Supplier Classification

Supplier Classification					
	A	B	C	D	E
	Service Provider	Manufacturer	Manufacturer	Distributor	Ancillary
Quality Clause	Processes or tests Cascade products, includes calibration services, NDT, X-Rays	Fabricates, Assembles parts as called out on Cascade drawings	Fabricates, Assembles parts as called out on OEM drawings	Resells new and serviceable parts and materials	Provide parts/materials that aren't embodied on an aircraft.
Q1	X	X	x		
Q2	X	X	X		
Q3	X	X			
Q4	X	X	X		
Q5	X	X	X		
Q6	X	X			
Q7	X	X	X		
Q8	X	X			
Q9	X	X	X		
Q10	X	X	X	X	
Q11	X	X	X		
Q12	X	X	X	X	
Q13				X	
Q14	X	X			
Q15	X	X	X	X	
Q16	X	X	X	X	X
Q17	X				
Q18				X	
Q19		X	X	X	
Q20	X	X			
Q21	X	X			
Q22	X	X	X		
Q23	X	X	X	X	X
Q24	X	X	X		
Q25	X	X	X	X	X
Q26*					

*Cascade Aerospace will specifically advise the supplier if this clause is to be followed as per notes entered on our Purchase Orders.



4 Definition of Terms

- 4.1 **Airworthy** - State of an article conforming to its type design and being in a condition for safe operation.
- 4.2 **Authority** - The aviation authority having jurisdiction over the manufacturer, aircraft owner/operator, or maintenance organization; the authority could be civil or military.
- 4.3 **Certificate of Conformance** - A document certified by a competent authority that the supplied good or service meets the required specifications. It is also called a certificate of compliance or certificate of conformity.
- 4.4 **Certified Personnel** - Personnel qualified by an external/internal competent body to carry out special tasks (e.g., non-destructive testing certified personnel, licensed maintenance personnel).
- 4.5 **Controlled Special Processes (ST-PR-002)** - Processes are required to be reviewed on a case-by-case basis. Controlled special processes TYPICALLY are processes covered by NADCAP and may include, but not limited to:
- 4.5.1 Heat treating of metals
 - 4.5.2 CNC machining
 - 4.5.3 Plating
 - 4.5.4 Welding
 - 4.5.5 Etching and conversion coating
 - 4.5.6 Flame Spraying
 - 4.5.7 Shot peening
 - 4.5.8 Non-destructive testing
- 4.6 **Corrective Action (QA-PR-002)** - The purpose of this step is to identify all the corrective / preventive actions required to correct the root cause(s) to prevent the problem from occurring, or greatly reduce the probability that the problem will recur. Long-term corrective / preventive action has the broadest generic implications, they ensure safety, and are economically sound and have a high reliability to prevent occurrence or reoccurrence.
- When deemed necessary, Cascade Quality may require Root Cause Analysis for an individual nonconformity or any systemic concerns that may be identified. If this occurs, the supplier may be contacted to provide the information or a Corrective Action Request" (CAR) may be issued. Examples of critical items include safety critical items, fracture critical items, mission critical items, airworthiness limitations items, key characteristics, and maintenance tasks critical for safety.



- 4.7 **Counterfeit Part** - An article produced or altered to imitate or resemble an “approved article” without authority or right to do so, with the intent to mislead or defraud by passing the imitation as original or genuine.
- NOTE:** Commonly referred to within the industry as a “bogus part.”
- 4.8 **Critical Items (MF-PL-001)** - Critical Item: Those items (e.g., functions, software, parts, characteristics, processes) having significant effect on the product; including safety, performance, form, fit, function, producibility, service life, etc.; that require specific actions to ensure they are adequately managed. Examples of Critical Items include safety critical items, fracture critical items, mission critical items, Key Characteristics, etc.
- 4.9 **Customer** - This term applies to Cascade Aerospace’s direct customer. This may not be the end user of the item, and higher-level quality requirements from customers of Cascade Aerospace’s direct customer may be flowed down by Cascade’s customer.
- 4.10 **Distributor** - Suppliers who do not manufacture products, but instead purchase and distribute finished products to Cascade from other sources. This typically includes fastener hardware (nuts, bolts, rivets, etc.) chemicals for special processes (paint, sealants, etc.), and system components (connectors, tubes, valves, etc.). Raw material distributors are considered as Raw Material suppliers.
- 4.11 **ECS - Engineering Change Sheet** - Cascade’s revision controlled document indicating the item’s engineering data definition, special instructions and condition of supply if it deviates from the engineering definition. If the Purchase Order calls an ECS then the requirements of the ECS are supplemental to the Engineering requirements and in the event of conflicting requirements the ECS takes precedence.
- 4.12 **First-Article Inspection (MF-PR-006)** - AS 9102, complete inspection of ALL drawing dimensional characteristics and notes is required to ensure compliance to the applicable engineering drawings and specifications.
- 4.13 **Human Factors** - The study of human behavior (physically and psychologically) in relation to particular environments, products, or services and the potential effect on safety. Recognition that personnel performing tasks are affected by physical fitness, physiological characteristics, personality, stress, fatigue, distraction, communication, and attitude in order to ensure a safe interface between the personnel and all other environmental elements such as other personnel, equipment, facilities, organizations, procedures, and data.
- 4.14 **Key Characteristic (AS 9103)** - An attribute or feature whose variation has a significant effect on product fit, form, function, performance, or service life, that requires specific actions for the purpose of controlling variation.
- NOTE:** Special requirements and critical items are new terms and, along with key characteristics, are interrelated. Special requirements are identified when determining and reviewing requirements related to the product (see 7.2.1 and 7.2.2). Special requirements can require the identification of critical items. Design output (see 7.3.3) can include identification of critical items that require specific actions to ensure they are adequately managed. Some critical items will be further classified as key characteristics because their variation needs to be controlled.



- 4.15 **Maintenance (PG-PL-002)** - Means the overhaul, repair, required inspection or modification of an aeronautical product, or the removal of a component from or its installation on an aeronautical product, but does not include elementary work, servicing; or any work performed on an aircraft by the manufacturer prior to the issuance of whichever of the following documents is issued first:
- 4.15.1 Certificate of airworthiness,
 - 4.15.2 Special certificate of airworthiness,
 - 4.15.3 An export airworthiness certificate; (maintenance)
- 4.16 **Maintenance (another example)** - Performance of tasks required to ensure the continuing airworthiness of an article, including any one or combination of overhaul, inspection, testing, replacement, defect rectification, and the embodiment of a modification or repair.
- NOTE:** This term applies to the overhaul, repair, inspection, replacement, modification, or defect rectification of an article that is performed after completion of manufacturing and initial airworthiness certification by or on behalf of the relevant authority.
- 4.17 **Manufacture (PG-PL-002)** - Means the making, assembly and fabrication, other than the fabrication of parts as part of a repair, of aeronautical products, and includes, in the case of newly manufactured aircraft, any work performed on an aircraft prior to the issuance of the first certificate of airworthiness or export certificate of airworthiness by the manufacturer.
- 4.18 **MRB – Material Review Board (MF-PR-010)** - A cross-functional group that reviews production or purchased items on hold due to usability concerns and determines their disposition, which may include use, rework, repair, scrap, or returning to the supplier for further investigation.
- 4.19 **Non-Production Item Suppliers** - Suppliers other than Production Item suppliers as defined above. These would typically be suppliers of consumable shop and office supplies, tooling or production equipment, shop, computer and office equipment, etc.
- 4.20 **Product** - A physical object that comprises a final deliverable object or is an element of a final deliverable object. Suppliers who manufacture physical product that is contained in or on Cascade deliverables to customers. This supplier typically does not include consumable shop supplies that are not part of the customer deliverable but are used to manufacture the product. For example, a product supplier supplies the paint that is used on a deliverable product to the customer, but not the masking material for the paint operation. Product suppliers include suppliers who manufacture chemicals for special processes such as paint, anodizing, etc.
- 4.21 **Raw Material** - A special type of product supplier or distributor that provides raw material to Cascade which Cascade or their suppliers then converts into finished or semi-finished products. For example, sheet metal, plate, extrusions, rod, bar, plastic, forgings, castings, etc.



- 4.22 **Release Certificate** - Document attesting that a product is released for use (release/return to service) and certifying that the activities performed, and the results achieved, conform to established organization, regulatory, and customer requirements with no known nonconformities that would endanger flight safety.
- 4.23 **Repair** - Action taken to restore a non-conforming item to a serviceable condition that does not comply with drawing/specification requirements. Repair conditions typically require MRB approval.
- 4.24 **Rework** - Action taken to bring a non-conforming item into compliance with the drawing/specification requirements. In many cases rework may be authorized by specifications without requiring prior approval, however if not clear, authorization shall be requested prior to performing rework.
- 4.25 **Risk** - An undesirable situation or circumstance that has both a likelihood of occurring and a potentially negative consequence.
- 4.26 **Services** - Suppliers who perform contracted services other than special processes that require an elevated level of quality control. Examples include, but not limited to:
- 4.26.1 Engineering services
 - 4.26.2 Calibration services performed on production measurement equipment
 - 4.26.3 Mechanical tests or chemical analysis for production process verification or certification requirements.
- 4.27 **Special Process (PG-PL-002)** - Process where the resulting output cannot be verified by subsequent monitoring or measurement and, as a consequence, deficiencies become apparent only after the product is in use or the service has been delivered.
- 4.28 **Supplier (PG-PL-002)** - Any external agent that is performing aircraft maintenance or manufacturing work under a contract issued by Cascade Aerospace in accordance with this policy, or performing test equipment calibration in accordance with TO-PL-001. This does not apply to maintenance or manufacturing performed by the Original Equipment Manufacturer (OEM) of the aeronautical product or an organization holding Parts Manufacturer Approval (PMA) for the aeronautical product.
- 4.29 **Suspected Unapproved Part (ST-PL-001, ST-PR-004)** - SUP Suspected unapproved part. Any part, component, or material that has not been manufactured in accordance with the approved procedures in Chapter 561 of the Airworthiness Manual, or repaired in accordance with CAR 571, or their foreign equivalences, that may not conform to an approved type design, or may not conform to an established industry specification for standard parts.
- NOTE:** This includes: (1) parts shipped to an end user by a supplier who does not have direct delivery authorization from the approved production organization; (2) new parts that do not conform to the approved design/data; and (3) parts that have been intentionally misrepresented, including counterfeit parts.



Non-conforming new parts received from the approved Original Equipment Manufacturer (OEM) are not SUP and are to be tagged with form QA-FR-003 Unserviceable Tag and disposed as instructed by the owner of the part. SDR Service Difficulty Report in accordance with CAR 521.

4.30 **Technical Data (MF-PR-006)** - The applicable technical data in the approved type design provides the information regarding dimensions, materials, manufacturing processes and inspection requirements necessary to manufacture an aeronautical product in conformance with the approved type design. The applicable technical data includes:

4.30.1 The drawings and specifications and a listing of those drawings and specifications necessary to define the dimensions, materials, parts and assembly of the product;

4.30.2 The manufacturing process specification; and the inspection and testing requirements.

5 **Ethics**

5.1.1 Cascade expects that our suppliers and subcontractors have and maintain a high standard of Business, Work and Social Ethics. We demand honesty and integrity in all our activities, and expect the same from our Suppliers and Customers. This includes ensuring no bribe, gift, benefit or other inducement, directly or indirectly, is made to any official or employee of Cascade or a member of the family of such a person. Any illegal or other payment in conflict with this ethics section is a material breach of this Agreement, thereby rendering it invalid.

6 **Product Conformity & Safety**

6.1.1 As detailed in the AS9100 and AS9110 Standards, Cascade expects our suppliers and subcontractors to recognize their roles and have processes to maintain high standards of Product/Service Conformity and Product Safety. This includes:

6.1.1.1 understanding the importance of product safety

6.1.1.2 understanding the functions of the products and service, and the way they are used by the end users;

6.1.1.3 establishing processes to control product/service conformity and product safety, including lower level subcontractors and vendors; and

6.1.1.4 Training company personnel on their roles with respect to product/service conformity and safety.



- 6.1.2 Cascade reserves the right to require and request evidence from our Suppliers ensuring their organization has processes and their personnel are aware of"
 - 6.1.2.1 Their contribution to product or service conformity;
 - 6.1.2.2 Their contribution to product safety; and
 - 6.1.2.3 The importance of ethical behavior.

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7 Supplier Sign-off Sheet

7.1 Please complete, sign, and return this page to your Cascade Aerospace buyer.

SUPPLIER RECEIPT CONFIRMATION

This certifies that the Supplier Quality Manual:

- Has been received and retained for reference
- Has been read and understood by all appropriate personnel
- The supplier procedures and practices meet all applicable requirements
- Requirements will continue to be met and verified by the supplier's internal audit program

Company: _____

Address: _____

Telephone: _____

Signature: _____ Date: _____

Name: _____

Position: _____

Email: _____



8 Documentation

8.1 Document Control

- 8.1.1 Suppliers are accountable for ensuring that the latest document revisions are implemented after receiving notice of these revisions from Cascade Aerospace. The latest revisions for DND parts are available for viewing on the Cascade Internet site and on the TINA software system for approved suppliers.

9 Supplier Approval Status and Maintenance

9.1 New Supplier Approval and Qualification

- 9.1.1 All new Service providers and Manufacturers shall be audited prior to being added to our Approved Suppliers List (ASL). These audits are done by Quality either mailing out the forms, or by going on-site to the supplier's facility. Part suppliers must fill out a Parts Supplier Approval form (PG-FR-005) prior to being added to the ASL.

9.2 Supplier Limitation

- 9.2.1 Cascade Aerospace may, at any time and at its sole discretion, revoke the approval granted to a supplier. Any change in a supplier's status is based on data gathered by Cascade including, but not limited to, the following:
- Low Supplier Scorecards results.
 - Use of unapproved manufacturing processes.
 - Extended period of business inactivity.
 - Change in the supplier's manufacturing or processing capability.
 - High Risk Rating based on quality issues.

9.3 Supplier Inactivation

- 9.3.1 Quality issues attributed to a supplier will be issued an 8D form that must be completed and returned to Cascade by the required date noted on the form. The supplier must contain the issue, determine the root cause of the problem, and then come up with a Corrective action plan that must be approved by Cascade's Quality department.



- 9.3.2 Where a supplier has not responded to, or addressed all the issues to Cascade's satisfaction, the supplier may be deactivated. For a supplier that has been deactivated, any or all of the following restrictions and requirements shall apply:
- Supplier shall be removed from the ASL.
 - Any work currently in progress at the supplier's facility shall be immediately halted.
 - All products in transit to Cascade shall be quarantined upon arrival into our building. Disposition for this product will typically be a return to the supplier freight collect.
 - No new purchase orders will be awarded to this supplier.

10 Supplier Performance and Evaluation

10.1 Supplier Scorecards

- 10.1.1 Supplier Scorecards are conducted for the majority of our suppliers based on spend and business volumes and strategic significance to Cascade.
- 10.1.2 Supplier performance is based on the following criteria:
- On Time Delivery
 - Receipt Discrepancy Rate (material and paperwork)
 - Invoice Discrepancy Rate
 - Communication/AOG Coverage
 - Lean Initiatives/Cost Reduction Solutions

10.2 Scorecard Numbers

- 10.2.1 Suppliers are rated based on a Quantified score from information extracted from Cascade's Automated Inventory Control system, and multiplied by the weighting factor for that element.
- 10.2.2 Suppliers that score in the Unacceptable category will be communicated with directly and will be expected to provide Cascade with acceptable Corrective Action Plans to improve their scores, or they will be removed from the ASL.



Table 2 – Supplier Scorecard Information

Supplier #	Evaluation Period:		
Supplier:	Evaluation Date:		
Address:	Cascade Rep:		
City/State:	SCM Manager:		
Supplier Contact:	Department:		
Discussed with Supplier: (Y/N)			
Reviewed by Cascade Mgr: (Y/N)			
Measurement	Weight	Score (0-5)**	Weighted Score
On-Time Delivery Performance: (<55%=1, 55-60%=2, 61-65%=3, 66-70%=4, 71-75%=5, 76-80%=6, 81-85%=7, 86-90%=8, 91-95%=9, 96-100%= 10) **Scored out of 10	40%		
Receipt Discrepancy Rate	20%		
Invoice Discrepancy Rate	10%		
Pricing Trends	10%		
Communication/AOG Coverage	10%		
Lean Initiatives/Cost Reduction Solutions	10%		
TOTAL SCORE	100%		

Level	Platinum	Gold	Silver	Bronze	Unacceptable
Score	>600	500-599	450-499	400-449	<400

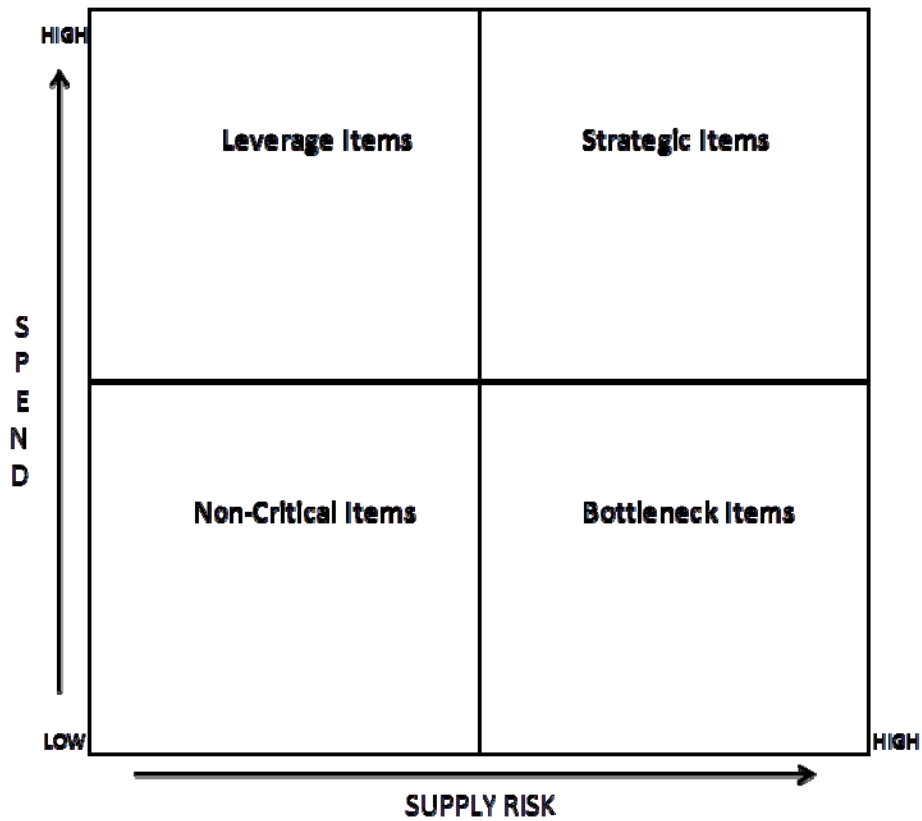


10.3 Supplier Risk Assessments

10.3.1 The Kraljic Grid is used to categorize what the supplier provides to Cascade Aerospace considering risk and value (spend) elements. The grid is broken into 4 quadrants. It has Leveraged, Strategic, Non-Critical and Bottleneck items. Strategic and Bottleneck items are rated as 1 based on these being higher risk, and the Leveraged and Non-Critical items are rated as 2.

Table 3 – Kraljic Grid

KRALJIC GRID





10.4 Risk Ratings

- 10.4.1 The Supplier Grade/Risk rating for a supplier is derived from the following formula: Grade = On time delivery X Quality Score X Kraljic grid category
- 10.4.2 A Quality rating is calculated by adding up the number of Quality Issues, and dividing these by the total number of purchase order lines awarded to that supplier.
- 10.4.3 For example, a supplier had 6 Quality issues out of a total of 500 purchase order lines, 6/500= .012 or 1.2%. A 1.2% Quality score =Low Risk and gets a 3.
- 10.4.4 This percentage rating then gives Cascade the data to apply a quality score for that supplier. The Quality scoring criteria is as follows:
 - Quality Score (Risk) = 1-2% = Low(3), 2.1-4.9% =Medium (2), >5% High (1)
- 10.4.5 The lower the grade the higher the Risk a supplier is to Cascade. The Risk Rating results for HIGH risk suppliers are communicated back to the supplier. Cascade expects these suppliers to review the results of their Risk Rating and will come up with Corrective Action plans to improve their scores. These plans must be reviewed and approved by Cascade. Failure to do so will result in removal from our ASL.

Table 4 – Sample Risk Rating Table

Purchase Order lines	Kraljic Grid Category	Kraljic Grid Rating	Supplier Approved	Supplies: Aircraft Parts/Materials/Services	On time delivery %	Quality Issues	Quality Rating (Quality Issues/Total Lines)	Quality Score	Grade	Risk Rating
1	S	1	Y	P	100	0	0.00%	3.00	300.00	LOW
171	S	1	Y	P	79	0	0.00%	3.00	237.00	MEDIUM
130	L	1	Y	S	75	6	4.62%	2.00	150.00	HIGH
2385	L	2	Y	M	90	0	0.00%	3.00	540.00	LOW
1415	L	2	Y	P	87	0	0.00%	3.00	522.00	LOW
285	S	1	Y	S	69	2	0.70%	3.00	207.00	MEDIUM
1309	L	2	Y	P	71	0	0.00%	3.00	426.00	LOW
3	S	2	Y	S	66	3	100.00%	1.00	132.00	HIGH



11 **Quality Clauses Defined (For Applicability see Table in 4.1)**

- Q1. Quality Management System - Supplier shall maintain a Quality Management System that meets or exceeds the requirements of Transport Canada AMO related to scope, FAA Repair Station related to scope, ISO 9001, SAE AS9100, AS9110, AS9120, or the equivalent aerospace industry recognized standard and applicable customer and/or regulatory authority standards. As part of this Quality Management System, the supplier shall provide and maintain without additional charge to Cascade, a quality system that complies with all specifications stated in the Purchase Order. Suppliers shall notify Cascade within three working days of any loss of registration/certification, including NADCAP. This requirement to notify is also applicable to sub-tier loss of Registration/Certification.
- Q2. Right Of Entry - The buyer, its authorized representatives, regulatory agencies and customers reserve the right of access to the supplier's, sub-contractors and sub-tier's premises at any point of manufacturing to determine quality of work and material. This may be done at any reasonable time and will be performed with the knowledge of the supplier.
- Q3. Sub-Contracting and Sub Tiers - Suppliers must contact Cascade for agreement on using any sub-tier sources and applicable manufacturing processes before any activity commences. Suppliers shall notify Cascade in advance of changes in the manufacturing facility location of the items at sub-tier suppliers, including processes (conventional and special processes) performed. Suppliers shall not relocate or subcontract any work without prior Cascade written approval. All suppliers and sub-tiers performing Outside Services shall comply with customer source lists in accordance with Customer defined requirements identified on the Purchase Order. Unless otherwise specified on the Purchase Order the requirements for the qualification of personnel shall be in accordance with the Suppliers internal requirements, and Cascade's customer requirements.
- Q4. Functional Test Reports - If functional test reports are required per the purchase order, the shipment must be accompanied by a legible and reproducible copy of the actual test results identifiable with the test parameters and products submitted. These reports must contain the signature and title of the authorized representative for the agency performing the test and must conform to specific requirements.
- Q5. Traceability - Suppliers shall prepare verifiable and lot-traceable quality records evidencing conformance of all items and inspections made and the outcome of such inspections including raw material used, relevant chemical, physical and mechanical test reports, special processes performed, as well as dispositions of non-conforming articles. These records shall be complete and readily available to Cascade, Cascade's customers and government or regulatory bodies upon request. These records shall not be discarded without prior Cascade written approval. Records may be retained in electronic or hard copy format at the suppliers' discretion unless otherwise specified for 7 years.



Q6. Chemical and Physical Test Reports - All purchase orders for chemicals must be accompanied by one legible and reproducible copy of all chemical and physical test reports. The report must contain the signature and title of the authorized representative for the agency performing the test and must conform to specifications. The purchase order number must be included on the report.

Q7. Source or Staged Inspection - Cascade and its customers reserve the right to have source inspection performed at the supplier's facility or sub-tier supplier facilities prior to shipment of any items. The requirement for source inspection shall be identified on the Purchase Order or in writing from Cascade Procurement. Approval of items by Cascade source inspection does not release the supplier of any of its obligations of item conformity, testing, inspection, quality control and associated documentation.

If source inspection is required, suppliers shall not ship items or perform the specified service without approval prior written permission from Cascade Procurement. Source inspection requirements shall be provided by Procurement via a separate letter indicating the specifics of the inspection and requirements to be met prior to release of items. Arrangement for timing of the source inspection shall be made by the supplier through direct contact with the Cascade Director of Supply Chain or Cascade Procurement as previously agreed. The supplier or sub-tier supplier shall make available to the source inspector such area, facilities, equipment, records or other assistance as required to verify item conformance.

Q8. Rework or Scrapping Product - Rework of items to drawing configuration, or scrap of non-conforming items may be made without prior Cascade approval where permissible in the drawing/specification. Non-conforming items shall not be repaired or used by the supplier or its sub-tiers without first receiving explicit repair or use instructions from Cascades Material Review Board (MRB), unless the supplier has received delegated MRB authority from Cascade. Suppliers shall identify all non-conforming items requiring MRB disposition to Cascade as soon as practical and include the following minimum information:

- Part number
- Cascade Purchase Order Number and line
- Supplier production batch or lot number
- Quantity in batch
- Quantity non-conforming
- Detailed text indicating the drawing or spec requirement and the specific non-conformance. Photos or sketches as appropriate
- Recommended disposition or repair scheme.
- Root cause of the non-conformance
- Corrective action taken and planned (including documented evidence of the corrective action taken)

As a minimum, suppliers shall include a mandatory inspection of the next 5 shipments for the nonconforming condition to ensure effective and timely corrective action has been implemented.



Non-conforming items must be reported to Cascade's Purchasing Management for disposition, and shall be identified with the applicable Cascade non-conformance number and/or customer non-conformance number as directed. Copies of the non-conformance document(s) disposition by Cascade shall accompany the non-conforming items on delivery to Cascade. Where repair, rework, or identification instructions have been completed by the supplier, a signed copy indicating completion of the required work shall be included for verification at Cascade.

Non-conforming items identified by the supplier or its sub-tiers after the items have been shipped to Cascade are required to be disclosed in a day from the time the scope of the disclosure has been identified internally at supplier prior to further item processing or shipping via a disclosure letter to Cascade. The disclosure letter shall include all pertinent information on the condition (i.e. part numbers, quantities delivered, serial numbers or lot numbers affected, time frame, description of condition, etc.), and short term corrective action (error containment), root cause and corrective actions taken. If further investigation is required to determine root cause and corrective actions, in the interest of expediency, root cause and corrective actions taken to prevent recurrence may be added at a later time as agreed with Cascade.

Suppliers shall maintain and retain a list of items scrapped and may be requested to provide evidence of scrapping of items to verify engineering scrap dispositions are carried out. The list of scrapped items may be periodically audited by Cascade, customer or regulatory bodies. Non-conformance tags directing scrap of items shall be signed or stamped and dated when completed and returned to Cascade for evidence of scrap actions.

For Lockheed Martin manufactured parts the supplier shall establish and maintain a Counterfeit Parts/Material Prevention and Control Plan using AS-5553 and/or AS6174 to ensure that Counterfeit Work is not delivered to Cascade. The purpose of the suppliers plan shall be to develop a robust process to prevent the delivery of counterfeit commodities and control commodities identified as counterfeit. The Supplier shall include this clause or equivalent provisions in lower tier subcontracts for the delivery of items that will be included in or furnished as work to Cascade.

Q9. Raw Material - Applicable only to product and raw material suppliers. Not applicable to standard catalogue hardware items. Unless otherwise authorized by Cascade, suppliers shall provide Cascade and retain on file relevant material test reports for raw material used to manufacture the items showing quantitative physical, chemical, mechanical and metallurgical properties traceable by lot number to the applicable Cascade product as follows:

- Raw material Supplier Name and address
- Date of report
- Packing Sheet/List or Certification Number
- Purchase Order or Contract Number
- Part/Extrusion Number (if applicable)
- Quantity



- Mill Name and Address
- Material Alloy and Temper
- Industry, Customer and Test Specifications and Revision Levels as applicable
- Mill Lot Number and Lot Number or purchase order traceable to the Mill
- Actual Mechanical and Chemical Property Test results of the material and if applicable any additional special test results such as non-destructive testing. Mill certification of Chemical Properties without actual test data shall be accepted as well.
- Authorized supplier representative, name or stamp and signature

These records shall be retained in accordance with clause Q5 and shall be readily accessible for verification during Cascade audits or other verification activities.

- Q10. Supplier Raw Material - Applicable to product and raw material suppliers when material is not provided by Cascade. The supplier shall maintain records of item validation on file, which shall be made available to Cascade upon request. Refer to Q9 for the requirements.
- Q11. Regulatory Certification - When required, the supplier shall include with each shipment an airworthiness certificate executed by an airworthiness authority or their authorized designee (e.g. Transport Canada, FAA, EASA, JAA, etc.) for all items. Preliminary arrangements shall be made with Cascade prior to item delivery to execute the conformity check without affecting agreed delivery schedule.
- Q12. Certificate Of Compliance - Each shipment must be accompanied by two legible copies of a Certificate of Compliance (C of C). The purpose is to certify that the supplier's material, processes, and finished parts were controlled and tested in accordance with the applicable specifications.

All material, components or other goods or services, as applicable, supplied to Cascade must be traceable to the Original Equipment Manufacturer, as identified on the Purchase Order. The OEM certification must be maintained by the supplier and be made available upon request by Cascade.

Customers shall provide a C of C for customer-supplied material or services, however the information provided on the C of C is at the discretion of the customer when the item is used for their programs. Suppliers shall supply and include with each shipment two copies of a certificate of conformity (C of C) attesting the release of the items included in the shipment. One copy shall be included with the packing slip or shipping documents on the outside of the package and the second copy contained with the items to prevent loss during transit or customs inspection.

- The C of C shall contain the following information:
 - Supplier Name and address
 - Cage Code if applicable



- Name and address of supplier who manufactured the item (if not the same as the direct supplier to Cascade)
- Date of certification or manufacture
- Packing Sheet/List or C of C Number
- Cascade Purchase Order and line number
- Identifying Part Number
- Cascade Drawing and revision (i.e. drawing sheet number or CAD file, parts list and/or notes list, ATP number, etc.)
- Quantity of items delivered
- Production Lot/Batch Number or job number and quantities of each if multiple lots or jobs
- Serial Numbers (if applicable)
- Used parts shall be accompanied by an acceptable maintenance release document signed by an authorized individual within the organization that performed the work. The maintenance release shall include the product identification (nomenclature, type/model number, name of manufacturer, part number and serial number), a brief description of the work performed (including applicable reference data, work order number and date), and the identification of both the authorized person signing the document and the maintenance organization.
- Raw material certification numbers or lot numbers traceable to the manufacturer and raw material source (not required for standard catalogue fasteners)
- For any controlled special processes performed in the manufacture of the items, identify the following (not required for standard catalogue fasteners):
 - Special process name or type
 - Special process specification number
 - Special process specification revision
 - Name of facility that performed the special process
 - Location or address of the facility that performed the special process
 - Certification numbers and/or production lot numbers and/or purchase order numbers for special processes performed that are traceable to the delivered item
- Any applicable discrepant item document numbers, (i.e. Cascade and/or customer rejection tag number)
- Authorized supplier representative name, stamp or signature
- Inspection/Test data if required
- If applicable, an Cascade Source Inspection stamp and date of inspection



- Enclose applicable Cascade non-conformance paperwork showing evidence of compliance.

In addition, the detail parts shall bear the final inspector stamp by the part marking. Where this is not practical each and every part shall be tagged and the stamp shall be applied on the tag.

Alternately, an electronic copy of the above documentation may be provided to Cascade in a manner agreed between Cascade and the supplier.

For items delivered through vendor-managed on-site inventory at Cascade, the supplier shall provide copies of the C of C on a regular basis as agreed with Cascade Procurement. These copies may be hard copy or electronic format as agreed. ATA 300 packaging.

- Q13. Certificate of Conformity Fasteners - This form, or your equivalent, is to be completed and submitted with fasteners.

Supplier: _____

Standards and Specifications: _____

Manufacturer (Name & Cage Code): _____

Lot Number: _____

Purchase Order/Item Number: _____

A COPY OF A WRITTEN CERTIFICATE BY THE MANUFACTURER IS ON FILE AT OUR FACILITY AND IS AVAILABLE FOR REVIEW. THE MANUFACTURER'S CERTIFICATE STATES THAT THE FASTENERS HAVE BEEN MANUFACTURED ACCORDING TO THE APPLICABLE STANDARDS AND SPECIFICATIONS, AND HAVE BEEN INSPECTED/TESTED BY A LABORATORY, AND THAT AN ORIGINAL LABORATORY TESTING REPORT IS ON FILE WITH THE MANUFACTURER AND IS AVAILABLE FOR INSPECTION.

AUTHORIZED SIGNATURE: _____

- Q14. Heat Treat Records - The supplier shall furnish, with each shipment, a copy of heat treat records for each lot/batch in accordance to the applicable drawing or specification (s).

- Q15. Product Identification - All material must be identified by the ordered part number, purchase order number, date of manufacture and must be permanently and legibly affixed directly to the surface of each article. In the event this is not possible due to physical size or nature of material, an identification tag will be securely affixed to each article, or if articles are packaged in individual or multi-unit containers, the containers must be identified with the part number.



- Q16. Preservation and Packaging – Unless otherwise specified by the item drawing, specification, or Purchase Order, Packaging shall meet the following:
- The seller 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.
 - The supplier shall incorporate best commercial standard practices for packaging and preservation (wrapping, padding, capping, forming, etc.) of ALL articles to prevent damage during shipment applying to this purchase order. Each package will be permanently and legibly marked with the purchase order number, manufacture's name and packing sheet number.
 - Identification: Each shipping container and intermediate package shall be identified with:
 - Purchase Order number
 - Part number
 - Quantity
 - Electro Static Discharge (ESD) sensitive warning (when applicable) and protection.
 - Cautionary Handling Instructions (as applicable)
 - Hazardous Material Identification (MSDS)
 - No Asbestos to be used for any packaging or protection.
 - ISPM Regulation of Packaging Material and International Trade.
- Q17. Calibration Services - This clause is applicable only to suppliers of calibration or test services. The supplier shall submit for each item calibrated or tested a record of actual results. This information may be provided with the item or in a method or format agreed with Cascade. The following minimum information shall be provided:
- Part Identifier (part number and serial number or lot number as applicable)
 - Cascade Purchase Order and line number
 - Unique supplier report number
 - Applicable tolerance ranges
 - Incoming condition of the item
 - Work performed and applicable specifications
 - Final condition of the item (which may include any remaining uncorrected condition)
 - Calibration standards traceable to NIST, National Institute of Standards and technology



- Q18. Time Temperature Sensitive Materials - For time and temperature-sensitive items shall be marked with date of manufacture. Not more than 20% of shelf life shall have expired at time of delivery to Cascade unless otherwise authorized. Suppliers shall provide Cascade with all pertinent information pertaining to shelf life and storage requirements, as applicable.
- Q19. Key Characteristics - Management of Key Characteristics that have been identified by Cascade or Cascade customers shall be monitored and controlled per AS9103 and applicable customer requirements. Acceptance plans may require Cascade and/or customer approval, shall be statistically valid and shall preclude acceptance of item lots whose samples have known non-conformities. Key Characteristics may be product or process related. Evidence of product or process conformity to the acceptance criteria shall be maintained.
- Q20. Manufacturing Plan - The supplier Manufacturing Plans and the sub-tier suppliers at specified locations executing the manufacturing plans to Purchase Order require Cascade approval prior to manufacturing. In addition, the selected items or processes may require qualification by Cascade and/or the customer prior to production or during FAI. If certain items and processes require pre-approvals and qualifications by the customer, Cascade shall be informed in a timely manner for concurrence to ensure pre-approvals and qualifications will be completed to Purchase Order before full scale production. After the initial approvals were granted, subsequent changes will continue to require Cascade approvals. The supplier shall notify Cascade in advance of any proposed change to the production process and shall receive approval prior to implementing the change. This requirement applies to all affected suppliers and their sub-tiers.
- For Lockheed Martin manufactured parts, the supplier must carry out all the processes in accordance with the revision specified on the Purchase Order. Current revisions can be requested from the Purchasing Department. Processing to be accomplished in performance of the purchase order is directly related to a Lockheed Martin Aeronautics Company purchase order. The work must be accomplished in accordance with process specification(s) listed on the Purchase Order, and the revision in effect as of the date of this Purchase Order per Lockheed Martin Appendix QJ. All requirements of Appendix QJ paragraph 12. a.-f. shall be accomplished. Appendix QJ is located at <http://www.lockheedmartin.com/us/aeronautics/materialmanagement.html>
- Q21. Quality Plan - Unless otherwise authorized by Cascade, the manufacturing suppliers shall develop a Manufacturing Quality Plan describing the internal processes and methodologies that contribute to full compliance to Cascade Quality Clauses and/or in compliance to ISO 100005.
- Q22. First Article Inspection - Applies only to product suppliers (including forgings/castings) and special process suppliers. Authorization to perform First Article Inspection must be approved by Cascade. Items manufactured and supplied to Cascade under this Purchase Order require First Article Inspection (FAI) in accordance with SAE AS9102. First Article Inspection Reports are to be completed on new items using tooling and processes representative of the first production run, or as requested by Cascade.



Partial First Article Inspections (often called “Delta FAI”) shall be performed when any of the events noted in section 5.3 of AS9102 occur, including (but not limited to) changes in production tooling, NC programs, and item configuration. Cascade is required to be notified of any FAI or delta FAI that may occur. All First Articles Inspection reports and Delta FAI reports shall be in accordance with AS9102. If forms other than those contained in the standard are used, they must contain all “Required” and “Conditionally Required” information and have the same field reference numbers and information. Copies of the supplier FAI or Delta FAI reports are required to accompany the applicable item delivery documents and a copy shall be retained as a quality record by the supplier. Alternately, the reports may also be submitted via electronic means in a manner and format agreed in advance with Cascade Purchasing.

All FAI Plans and final FAI Reports shall be approved by supplier Quality authorized personnel, stamped and dated. In addition, all FAI Plans and final FAI Reports shall be approved by Cascade authorized personnel, stamped and dated. Therefore the supplier shall provide all FAI plans for Cascade approval prior to execution of the manufacturing process. After the FAI has been executed any future FAIs or delta FAIs shall follow the same approval process as described above. Cascade may request to witness the FAI or delta FAI execution; in this case the supplier shall provide assigned Cascade representative all necessary assistance. Cascade representative will make all preliminary arrangements with the supplier in a timely manner to ensure effective execution of this assignment. Acceptance of the First Article shall not constitute acceptance of subsequent portions of work. Suppliers must give due notice for Cascade Resource scheduling.

- Q23. Language – The primary language of communication with Cascade shall be English. Unless otherwise specified, all data shall be available in the English language. The supplier is responsible for the accuracy and provision of all translations to other working languages, unless otherwise agreed with Cascade.
- Q24. Tool Control - Suppliers shall maintain a formal internal tool control system that allows for the proper segregation care, upkeep and maintenance, and accountability of Cascade and customer-owned tooling. The supplier is responsible for compliance with the applicable Cascade or end-customer tooling requirements Annual inventories of such tooling shall be performed with the results maintained in accordance with contractual requirements. Upon request the results of such inventories shall be forwarded to Cascade for review. Prior written approval from Cascade is required before modification or disposal of Cascade or customer-owned tools. Tools which control or check the final configuration of deliverable items are required to be inspected to engineering requirements a minimum of once per year (or inspected prior to use if used infrequently). If tooling is not inspected, then 100% item inspection shall be performed to confirm item conformance.
- Q25. Foreign Object Damage or Debris (FOD)-Suppliers shall ensure each article is free of FOD delivered to Cascade and at any assembly of a product. The Supplier shall initiate a FOD Procedure to control this activity.

For Lockheed Martin manufactured items, refer to National Aerospace Standard NAS412 Foreign Object Damage/Foreign Object Debris Prevention. Whenever and/or whenever FOD entrapment or foreign objects can migrate, the supplier shall ensure that applicable Lockheed Martin Quality clause Q4R FOD requirements are flowed down the supplier's subcontractors at every tier.



Q26. Cascade has identified that certain items are potentially high risk for suspected/counterfeit material and can only be procured from the OEM/OCM or one of its authorized distributors. The supplier shall provide the required documentation based on supplier designation detailed below:

- OEM/OCM – Provide OEM/OCM Certificate of Conformance
- Authorized franchise distributor for OEM/OCM – Authorized Franchise Distributor's Certificate of Conformance

The supplier shall provide one certificate of conformity with a legal name, stamp, or signature indicating compliance through supplier's approved quality system for each shipment. The certificate of conformity shall contain, as a minimum, the specifications and/or drawing number, revision level, special processes (as applicable), the name of the manufacturer, the lot number/batch number, date or serial number, purchase order number (and item number when applicable) and a factual statement that inspection/test is on file at the supplier's facility. This information/data will be made available for review by Cascade upon request.

If material cannot be procured for the OEM/OCM or one of its authorized suppliers, Cascade approval is required prior to the issuance of the purchase order by the supplier.

12 General Requirements

12.1 Quality Management System

12.1.1 Manufacturer/Sub-contract and Service suppliers shall implement and maintain a Quality Management System that meets the requirements of this document. The person responsible for Quality within the supplier's organization should report directly to the company's senior management. This person shall have authority to ensure maintenance of a Quality Management System compliant with all applicable requirements. The supplier shall issue a Quality manual describing the procedures and responsibilities that define its Quality Management System. Suppliers shall provide adequate planning capabilities in order to meet and demonstrate to Cascade that the supplier can meet all the applicable requirements to supply parts and services to Cascade.

12.2 Engineering Design Control

12.2.1 General

12.2.1.1 The supplier's engineering function shall implement and maintain engineering manuals or procedures to control the design integrity of parts being made to Cascade's Purchase orders requirements and drawing specifications. The manual or procedures shall extend to design verification, contract compliance, engineering quality, regulatory conformance, and determining suitability for intended use. Personnel authorized to approve the supplier's engineering manual or procedures shall be identified and the scope of their authority defined.



12.2.2 Engineering Notice of Change

- 12.2.2.1 Cascade must be advised and approve of any sub-tier suppliers being used by the prime supplier. This must be provided in writing and sent to the buyer responsible for the original purchase order. The prime supplier cannot proceed without receiving written approval back from Cascade accepting the proposed sub-tier suppliers. Any supplier driven changes to part specifications, maintainability, and test plans must be approved by Cascade.

13 Production/Engineering/Supply Chain Requirements

13.1 Contract Review

- 13.1.1 Supplier shall perform contract reviews (if applicable) at all stages of its relation with Cascade to ensure compliance with all requirements (including submission of bid, acceptance of contract, and acceptance of changes/amendments to the contract).

13.2 Document and Data Control

- 13.2.1 All documents relating to the Quality system are to be reviewed for adequacy and approved by the suppliers authorized personnel prior to issue.
- 13.2.2 Supplier documentation and data related to parts or services need to be controlled and retained for at least 7 years.
- 13.2.3 Obsolete documents need to be removed from points of issue or otherwise controlled to preclude unintended use.

13.3 Control of Cascade Supplied Product

- 13.3.1 Cascade may provide parts, raw materials, tools etc. to facilitate manufacturing operations. The supplier shall maintain documented procedures for the processing requirements of Cascade supplied product. These procedures shall at a minimum establish how the supplier will inspect, store and manage Cascade supplied product. Suppliers shall report in writing any non-conformance relating to Cascade supplied product that is damaged, lost, or deemed to be unsuitable for use.



- 13.3.2 Cascade supplied product shall be stored in a segregated area in such a way to prevent unauthorized use, and be adequately protected against damage and deterioration. Cascade supplied product will at all times bear the labelling/markings that was supplied by Cascade so that this material can maintain its full traceability. Suppliers must report to Cascade by the end of February each year, on all Cascade owned materials held in the suppliers facility, so that Cascade can make a disposition decision on them. The suppliers report must, at a minimum, provide the quantity and unit of measure held, the part number, description, Cascade Purchase order number and location of each item. Suppliers do not have the authorization to modify or scrap any Cascade owned product without written consent from Cascade.

13.4 Product Identification and Traceability

- 13.4.1 Each product shall be individually identified in accordance with the drawings, specifications, and contractual requirements and all applicable requirements. Refer to MF-PL-001 for specific part marking requirements for Cascade proprietary parts.

14 Process Control

14.1 General

- 14.1.1 The supplier is expected to plan production, installation and any processes that affect the Quality of the product, and ensure that they are carried out under controlled conditions. These conditions include: suitable production and installation equipment, documented work instructions, as well as a suitable working environment. There should be clear definitions of workmanship criteria or standards. Cleanliness and organization shall be appropriate to the work being performed.
- 14.1.2 Suppliers using controlled processes, including sub-tier suppliers, shall be approved by Cascade and qualified for each controlled process they perform for Cascade including First Article Inspections. Suppliers must conform to the Quality Clauses as outlined in Section 9.

15 Purchasing

15.1 General

- 15.1.1 The supplier shall maintain documented procedures to ensure purchased products conform to all applicable specifications and requirements.
- 15.1.2 The supplier shall:
- have a supplier rating system
 - select suppliers on the basis of their ability to meet all applicable requirements



- flow down appropriate engineering, quality and technical requirements to their sub-tier suppliers

15.1.3 The supplier retains sole accountability for the quality of products and services delivered to Cascade and for the performance of its sub-tier suppliers.

16 Documents required with Shipments

16.1 General

16.1.1 All required documents as listed in Annex A must be included for product acceptance. Any pertinent documents relating to a Cascade Purchase Order (this includes supplier Purchase orders to a sub-tier, sub-tier Certificate of Conformity (C of C) and test/inspection reports etc.) shall be included with the suppliers own documents when delivering product to Cascade.

16.2 Packing Slip

16.2.1 The supplier shall supply at least 2 copies of the packing slip (1) inside, and (1) outside on the packaging of each shipment.

16.3 Certificate of Conformance (C of C)

16.3.1 The supplier shall supply a C of C stating the products and/or services provided meet all the applicable drawings and specifications, and will note the applicable document revision and amendment status. For parts supplied by a distributor, the original manufacturer's C of C will be included with the paperwork provided to Cascade.

16.4 Authorized Release Certificate (ARC)

16.4.1 When required by a Cascade purchase order or contract, a manufacturer who holds the appropriate regulatory approvals for their proprietary design, must provide an Authorized Release Certificate (TCCA Form One, FAA 8130-3, JAA Form One, EASA Form 1) in accordance with domestic and foreign regulatory requirements. When issuing an ARC for new aeronautical products which are eligible for use on several different aircraft model types, suppliers should enter all know aircraft model types in the relevant block of the certificate compliant with National Airworthiness Authority regulations.

16.4.2 Suppliers of inspected, tested, overhauled, repaired, rebuilt, altered, or modified aeronautical products must provide an original ARC every time.



16.5 Tear down Reports

- 16.5.1 When required by a Cascade Purchase Order or contract, a tear down report shall be submitted to Cascade in order to authorize the work performed on the aeronautical product. The tear down report will include the following items:
- A summary of the required repairs including the estimated labor required to carry out the work
 - A summary of the parts requiring replacement
 - Any other costs/tests/services that are necessary to complete the work
 - An estimated time frame in work days to complete the work
 - A list of the approved documentation that will be used to carry out the work (including maintenance manuals, service bulletins, and approved drawings)
 - A teardown cost if the work is not approved by Cascade
- 16.5.2 Cascade will review the tear down report and will advise if the work is authorized or not.

17 Corrective Action

- 17.1 Where a product or service does not conform to purchase order requirements the supplier is required to correct the problem and take corrective action to prevent reoccurrence.
- 17.2 Depending on the safety risks of the non-conformity and/or impacts on meeting our customer's requirements the Manager – Quality may issue a 7D Corrective Action to the supplier.
- 17.3 The supplier is required to respond to a 7D Corrective Action within thirty days. The response shall include:
- 17.3.1 Containment (short term corrective action) to prevent further occurrences of non-conformity until a long term corrective action can be implemented.
- 17.3.2 Root cause analysis to determine why the non-conformity occurred.
- 17.3.3 Corrective action plan to describe how the root cause(s) will be corrected to prevent reoccurrence over the long term.
- 17.4 The Manager – Quality may require verification of the implementation and effectiveness of the corrective action(s).
- 17.5 Failure to provide an appropriate response to the 7D Corrective Action by the due date may result in suspension of the supplier approval and suspension of further purchase orders. Contact the Manager – Quality or the Manager – Purchasing for clarification of these requirements or if more time is required to respond.



Annex A – Documents Required with Shipments

Document	Supplier Class Applicability
Shipping Label	ALL
Packing Slip	ALL
Suppliers Certificate of Conformance	A,B,C
First Article Inspection Report (when required)	B
Tear Down Report (when required)	A,B
Component/Logbook records (where necessary) for engine, propellers or batteries. Component History cards for DND R&O items.	A
Test Reports	A,B
Material Safety Data Sheets (MSDS) must not be older than 3 years	ALL

A= Sub-Contractor/Services

B= Manufacturer

C= Distributor

D=Ancillary (Non-aircraft parts/material)