



Ducommun
Interconnect Solutions
Joplin, MO

**Product Assurance
Requirements
For
Ducommun
Suppliers**

Q1 - MINIMUM QUALITY REQUIREMENT

A. General:

1. Notwithstanding the provisions of the "Q CODES" and "P CODES", the seller is in no way relieved of the final responsibility of furnishing the supplies or services AS SPECIFIED on the PO. All departures from Drawings, Specifications or other PO Requirements must have disposition approval by a DUCOMMUN Quality Assurance Representative before acceptance can be made. ALL specifications and/or standards are to revision level of the date of the purchase order unless otherwise specified or change is made to the purchase order. Compliance with the requirements of these clauses does not reduce supplier responsibility for furnishing materials and services which fully comply with all applicable drawings and specifications requirements, nor does it guarantee acceptance of materials or services by Ducommun. In the event that materials or services are found to be defective and cannot be demonstrated by the supplier to be in conformance with purchase order requirements, Ducommun shall have the right to reject them.
2. Facility access must be extended to Ducommun, its customer(s) and to the regulatory authorities involved in the order. Access must also be given for all applicable quality records developed as a result of the order.
3. Suppliers are required to have a documented Quality System in place.
4. Seller further warrants that the performance of work services shall conform with the requirements of this purchase order and to high professional standards including product safety. These warranties shall survive inspection, test, final acceptance and payment of goods and services.
5. Suppliers are required to ensure their employees are aware of their contribution to the product or service, their contribution to product safety, and the importance of their ethical behavior.

B. Certificate of Conformance:

A Certificate of Conformance is required with each shipment. The certificate of conformance shall include the following and any additional requirements as defined on the Purchase Order.

1. Each shipment must be accompanied by a minimum of one (1) legible and reproducible copy of a certification stating that the items produced were from materials which conform to all applicable specifications.
2. The certificate must be signed and dated by an officer of the company. The signature is required to be legible and or identifiable. It is recommended for the name and title to be printed near the signature to assure that the signature is identifiable.
3. The certification must also indicate that the seller or the original manufacturer has available for examination, specific data or other objective evidence that the material conforms to the applicable specifications and Ducommun PO requirements (if required).
4. The certification must also include the original manufacturer's name and lot number or date code as applicable.
5. Certificates of Conformance for non-standard parts shall be the as-built drawing revision letter plus any change notices, as stated on the P.O.
6. The certificate shall certify that the component provided is the part number as identified on the Ducommun Purchase Order (it is acceptable for the certificate to also contain the OEM part number if it is different), this includes both franchised distributor certificates and OEM certificates (if both are provide both must show the PN as identified on the Ducommun Purchase Order).
7. A certificate from a Franchised Distributor must also establish traceability to the Original Manufacturer including the address of the facility of manufacturer of each part. The preferable method is for the Franchised Distributor to provide a copy of the Manufacturer's certificate for the lot number being supplied, along with their Franchised Distributor certification. Acceptable, but not preferable, is a Franchised Distributor certificate identifying the Original Manufacturer.

C. **Supplier Notification:**

1. Suppliers are required to notify Ducommun of any proposed changes to items ordered (i.e., materials, processes, etc.) and obtain prior written approval.
2. Suppliers are required to notify Ducommun of changes in location (facility) or name.
3. Ducommun must approve nonconforming material prior to shipment. If nonconforming material is shipped to Ducommun, notification must be made in writing defining the nonconformance, affected shipment(s) and lot codes. Notification is to be made within 24 hours of the identification of the occurrence.
4. Suppliers are required to proactively notify Ducommun of any planned EOL / obsolescence that could impact Ducommun based on previous 2 years of orders placed.
5. Supplier shall notify Ducommun if seller or seller's sub-tier receives a U.S. government Corrective Action (**GCAR**) related to goods, services, or systemic nonconformance's provided or associated with Ducommun's purchase order.
Seller shall provide to Ducommun:
 - Copy of the GCAR and any related documentation.
 - Reasonable opportunity for Ducommun to a review draft response.
 - Copy of the final GCAR response submitted to the government.

D. **Documentation:**

1. Suppliers are required to maintain supporting records including test reports and certifications for a period of **TEN** (10) years minimum unless otherwise stated on the PO.
2. Suppliers are required to document any rework performed and the re-inspection of all related characteristics to that rework. The part must then be certified to meet all requirements of the contract, specification, drawing or other approved product description without changing the other characteristics of the part.

E. **Sub-Tier Supplier Control:**

1. Control and qualification of sub-tier suppliers shall be the responsibility of ALL suppliers of material to Ducommun. Ducommun reserves the right of verification by performing "In-House" audits of suppliers and sub-tier suppliers. It is the supplier's responsibility to flow down the applicable requirements to the sub-tier, including key requirements where required.

F. DFARS 252.225-7009:

1. 252.225-7009 Restriction on Acquisition of Certain Article Containing Specialty Metals, is in effect on this order.
2. This Specialty Metals clause prohibits the contractor (including its suppliers at every tier) from incorporating into parts, components, and /or end item deliverables “specialty metals” (identified in the clause, including titanium and stainless steel) which have been melted outside the United States, its possessions, or Puerto Rico, unless certain limited exceptions set forth in the clause or DFARS.
3. The Specialty Metals clauses can be found at:
 - a. 252.225-7008 Restriction on Acquisition Specialty Metals
 - b. 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals
 - c. 252.225-7010 Commercial Derivative Military Article – Specialty Metals Compliance Certificate
4. Qualifying countries are listed at:
 - a. 252.225-7012 Preference for Certain Domestic Commodities
5. If your organization is issued a purchase order, compliance to the following is strongly encouraged:
 - a. Your Quality Assurance Personnel, particularly Receiving Inspection, (i.e. where in-coming material and certifications are verified), should be made aware of specialty metals clause requirements, and ensure that no foreign melted specialty metals are utilized to fabricate any components for use on a product supplied to Ducommun Inc. unless they are melted in a qualifying country.
 - b. If a distributor or other sub-tier supplier is the source of your material, ensure that the Specialty metals clause requirements have been flowed down. Also take the necessary steps to ensure that your supplier provides only specialty metals (such as titanium or stainless steel) that have been melted within the United States or in a qualifying country and, if required, proper certifications are issued.

G. Export Control:

1. Seller agrees to comply with all applicable U.S. export control laws and regulations, specifically including, but not limited to, the requirements of Arms Export Control Act, 22 U.S.C.2751-2794, including the International Traffic in Arms Regulation (ITAR), 22 C.F.R. 120 et seq.: and the Export Administration Act, 50 U.S.C. app. 2401-2420, including the Export Administration Regulations, 15 C.F.R 730-774; including the requirements for obtaining any export license or agreement if applicable. Without limiting the foregoing, Seller agrees that it will not transfer any export controlled item, data, or services, to include transfer to foreign persons employed by or associated with, or under contract to Seller or Seller’s lower-tier suppliers, without the authority of an export license, agreement, or applicable exemption or exception. Seller agrees to notify Ducommun if any delivery under this contract is restricted by export control laws or regulations. Seller shall immediately notify the DUCOMMUN Procurement Representative if Seller is, or becomes, listed in any Denied Parties List or if Seller’s export privileges are otherwise denied, suspended or revoked in whole or in part by any U.S. Government entity or agency. If seller is engaged in the business of either exporting or manufacturing (whether exporting or not) defense articles or furnishing defense services. Seller represents that it is registered with the Office of Defense Trade Controls, as required by the ITAR, and it maintains an effective export /import compliance program in accordance with the ITAR. If Seller is a signatory under a Ducommun export license or export agreement (e.g., TAA, MLA), Seller shall provide prompt notification to Ducommun Procurement Representative in the event of change circumstances including, but not limited to, a violation or potential violation of the ITAR, and the initiation or existence of a U.S. Government investigation, that could affect the Sellers’s performance under this Contract. Seller shall be responsible for all losses, costs, claims, causes of action, damages, liabilities and expenses, including attorneys’ fees, all expense of litigation and/or settlement, and court cost, arising from any act or omission of Seller, its officers, employees, agents, suppliers, or sub-contractors at any tier, in the performance of any of its obligations under this clause. If the technical data required to perform this Contract is subject to the ITAR and is subject to a DSP5, Seller shall comply with the following:

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- a. The technical data shall be used only to manufacture the Work required by this Contract; and
- b. The data shall not be disclosed to any other person except lower-tier subcontractors within the same country;
- c. Any rights in the data may not be acquired by any foreign person; and
- d. Seller, including lower-tier subcontractors, shall return, or at Ducommun direction, destroy all the technical data exported to Seller pursuant to this Contract upon fulfillment of its terms;
- e. Unless otherwise directed by Ducommun, Seller shall deliver the work only to Ducommun or to an agency of the U.S. Government.
- f. Seller shall include the terms of this paragraph (g) in all lower-tier sub-contracts issued when technical data is provided to the lower-tier subcontractor.

H. **Supplier First Article:**

1. For all non-COTS parts, supplier shall have a First Article / first piece Verification on file to be provided to Ducommun upon request in accordance with AS9102 requirements.

I. **Counterfeit Parts Prevention**

1. This requirement establishes specific Ducommun quality requirements to reduce the risk of counterfeit parts entering Ducommun's supply chain. These requirements are in addition to those set forth in any other contracted document. In the event that materials or services are found to be defective and cannot be demonstrated by the supplier to be in conformance with purchase order requirements, Ducommun shall have the right to reject them. It will be the seller's responsibility to cover all costs for rework, repair, and replacement if any certified part is found to be counterfeit.
2. AS5553 shall be used as the reference guideline concerning any questions in regards to counterfeit components. If any conflicts are identified between this requirement and the AS5553, the requirement will default to the AS5553 requirements.
3. A counterfeit part is defined as: A suspect part that is a copy part or substitute without legal right or authority to do so or one whose material, performance, or characteristics are knowingly misrepresented by a supplier in the supply chain. Examples of counterfeit parts include but not limited to: Parts which do not contain the proper internal construction (die, manufacturer, wire bonding, etc.) consistent with the ordered part.
 - a. Parts which have been used, refurbished or reclaimed, but represented as new product.
 - b. Parts which have different package style or surface plating/finish than the ordered parts.
 - c. Parts which have not successfully completed the Original Component (OCM's), Original Equipment (OEM's), full production and test flow, but are represented as completed product.
 - d. Parts sold as unscreened parts, which have not successfully completed up screening.
 - e. Parts sold with modified labeling, or markings intended to misrepresent the part's form, fit, function, or grade.
4. Parts which have been refinished, up screened, or uprated and have been identified as such, are not considered counterfeit.

5. ASL: Components are to be purchased only from the Original Equipment Manufacturer (OEM), Original Component Manufacturer (OCM), or a Franchised Distributor of the OEM/OCM.
 - a. The OEM, OCM, or Franchised Distributor shall provide with the shipment a Certificate of Conformance in accordance with Q1-b above.
 - b. When the material is not available from the OEM/OCM or the approved reseller the seller shall notify the Ducommun buyer.
 - c. Seller shall maintain a Counterfeit item risk mitigation process internally and with its suppliers using SAE AS5553 as a guide and IDEA-STD-1010.
 - d. Product traceability – Seller shall be capable of providing full traceability for the parts being purchased, including names and addresses of prior sources (if any).
 - e. Seller to maintain records containing date and/or lot codes, and any serialization associated with the purchase order and invoice for a period of 10 years or as defined by contractual requirements.

6. **Broker:** Components may NOT be purchased from Brokers (non-franchised distributors), unless clear explicit authorization is granted by Ducommun via the Purchase order. Before procuring these components permission must be granted in writing from Ducommun's customer. Once permission is received from Ducommun's customer then component(s) can be procured.
 - a. Broker must meet the same certificate of conformance requirements as those required from an OEM or Franchised Distributor (see above). If the certification requirement cannot be met, the inspection and test requirements defined below must be met.
 - b. Broker must also provide their own certification that warrants parts to be original (that is not refurbished or reworked). If Broker cannot provide this certification, the parts may not be procured.

7. PENALTIES ASSOCIATED WITH FRAUD:

- a. Seller should be aware of potential Federal penalties associated with fraud and falsification. If counterfeit parts are furnished under this purchase agreement, such items shall be impounded.
- b. The seller shall promptly replace such items with items acceptable to Ducommun and the seller may be liable for all costs relating to impoundment, removal, and replacement.
- c. Ducommun may turn such items over to US Government authorities (Office of the Inspector General, Defense Criminal Investigative Services, Federal Bureau of Investigation, etc.) for investigation and reserves the right to withhold payment for the items pending the results of the investigation.

J. FOD Prevention:

1. Suppliers are required to have an active F.O.D. (Foreign Object Debris/Damage) prevention program that at a minimum complies with one of the following standards or an equivalent:
NAS 412.
2. National Aerospace FOD Prevention Guideline - <http://as9100store.com/downloads/NAFPI-FOD-Prevention-Guideline.pdf>
3. Lockheed Martin Aerospace FOD Quality Clause (Q4R) requirements –
<https://www.lockheedmartin.com/en-us/suppliers/business-area-procurement/aeronautics/quality-requirements/clauses.html>

K. **Shelf life:**

1. If a material has a defined shelf life, the shelf life information must be included with material upon receipt. The preferred location for all information is the certificate of conformance/shipping paperwork but is not required and may be located in an alternate location. The item, package, or container, in addition to the C of C/shipping paperwork, shall also be clearly labeled. The information shall include, but is not limited to,:
 - a. Normal material identification requirements (name, part or code number, specification number, type, size, quantity, etc.
 - b. Date of Manufacture or Cure (as applicable)
 - c. Date of Expiration or other shelf life expiration definition (example 12 months from DOM or 12 months from date of receipt)
 - d. Lot Number
 - e. Storage temperature and conditions (if applicable)
 - f. Special handling conditions (if applicable)
2. The shelf life dated material shall have as a minimum, 75% of the recommended shelf life remaining upon receipt.

L. **DFARS 252.225-7052 “Restriction on the Acquisition of Certain Magnets and Tungsten”**

The full DFARS clause may be found at https://ecfr.io/Title-48/se48.3.252_1225_67052

We recommend our suppliers review the clause for compliance and to ensure proper internal controls are put in place. Below is some additional guidance.

Samarium-Cobalt Magnets

The samarium metal is not prohibited from being sourced from China, Russia, North Korea or Iran. (Note that other laws and regulations prohibit and regulate acquiring products and services from these countries. For example, acquiring goods and services from Iran and North Korea is not permitted under DoD program).

The process of melting the samarium with cobalt, as well as all subsequent phases (powder formation, pressing, sintering or bonding and magnetization), must occur outside of the four proscribed countries.

This limitation is in addition to the specialty metal restrictions contained in DFARS 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals - Basic (Oct 2014). A product may comply with the specialty metals limitation but not comply with this new regulation. Samarium cobalt magnets must comply with both. The new rule applies even if the magnet is a commercial item.

Neodymium Iron-Born Magnets

The neodymium metal is not prohibited from being sourced from China, Russia, North Korea or Iran (but may be subject to other restrictions as noted above).

The process of melting the neodymium with iron and boron, as well as all subsequent phases (powder formation, pressing, sintering or bonding and magnetization), must occur outside the four proscribed countries.

There is an exception for neodymium iron-boron magnets manufactured from recycled material if the milling of the recycled material and sintering of the final magnet takes place in the United States.

The rule applies even if the magnet is a commercial item.

M. Q.S.L./Q.P.L. PRODUCTS

The following applies only to Q.S.L./Q.P.L. products:

Include with each shipment of Q.S.L./Q.P.L. product, a certified statement that items on the PO were produced by a currently approved QSL/QPL manufacturer as specified in Government or Prime contractor documentation. This statement must include the name of the manufacturer, part number, and DUCOMMUN purchase order number.

N. Supplier Corrective Action Request/s (SCAR):

In the event that products or documents are found with non-conformances or FOD is found in products, Ducommun reserves the right to issue Supplier Corrective Action Requests (SCAR). These Root Cause / Corrective Action requests may be subject to, but not limited to, creation and/or submission for review and approval of the following type of information:

1. Process Flow mapping
2. Product Part Approval Process (PPAP)
3. Process Failure Mode and Effect Analysis (PFMEA)
4. Design Failure Mode and Effect Analysis (DFMEA)
5. Measurement Systems Analysis (MSA)
6. Control Plans
7. Certificate of Analysis (CofA)
8. Statistical Process Control (SPC)
9. Change Management Plan (CMP)
10. Metallurgy

Q2 - CONTROL OF QUALITY MIL-Q-9858

The seller shall provide and maintain a system that complies with specification MIL-Q-9858, "Quality Assurance System Requirements".

Q3 - Q3 IS DELETED AND SUPERSEDED BY Q61

Q4 - QUALITY CONTROL SYSTEM REQUIREMENTS

The seller shall provide and maintain a system that complies with ISO 9001 and/or AS9100.

Q5 - DUCOMMUN SOURCE INSPECTION

ALL items covered by this PO are subject to Source inspection by a Ducommun Quality Representative and/or its Customer's Representative. Supplier will notify the buyer within adequate time for in-process or final inspection coverage.

Q6 - GOVERNMENT SOURCE INSPECTION (GSI)

All work on this PO is subject to inspection and test by the Government at all times (including the periods of performance) and places, and in any event, prior to shipment. The Government representative who normally services your plant should be notified forty-eight (48) hours in advance of the time articles or processes are ready for inspection or test. Test reports and certifications shall be complete and accurate before final government inspection can be accomplished. If no Government representative normally services your plant, contact the buyer signing this PO. Evidence of Government inspection must be shown on all shipping documents, or written waiver of Government Source must accompany shipment.

Q7 - MATERIAL/PROCESS CERTIFICATION

Supplier shall submit, with each shipment, one reproducible record of raw material and processes, and certification to the applicable material and process specification (s). The certificate shall contain a list of the applicable specifications including revision letters and identification by heat or lot number. Materials shall be traceable to the supplier and supplier's procurement document. Certifications must be signed and dated by an official of the company.

Q8 - TEST REPORTS

Each shipment must be accompanied by one (1) legible and reproducible copy of actual test reports, as indicated below, identifiable with material submitted. Reports must contain name of the agency performing tests and must assure conformance to specification or drawing requirements.

- A. Chemical
- B. Physical
- C. Electrical

Q9 - WIRE

Each spool of wire on this order must be legibly and permanently identified with:

- A. Gage,
- B. Cure date (as applicable)
- C. UL procedure number (as applicable)
- D. Military specification number (as applicable), and
- E. DUCOMMUN/Customer part number, PO number and manufacturer's lot number (where applicable).

Q10 - PACKAGING

Minimum packaging per MIL-STD-2073-1C.

Q11 - Q11 IS DELETED AND SUPERCEDED BY Q1-M

Q12 - LOT TRACEABILITY REQUIREMENT

Items supplied with this PO must have a serial, lot, or date-code which relates to the certification, testing, and manufacturing/inspection operations and each item must be marked with that number per MIL-STD-130.

Exception:

- A. Contacts on: The above marking call out is not requirement on individual contacts. However, the contacts supplied must be of same part number, manufacturer and lot code / date code as referenced on the certificate of conformance, see Q1.

Q13 - IDENTIFICATION OF LIMITED-CALENDAR-LIFE MATERIAL

See section Q1.K above.

Q14 - IDENTIFICATION OF LIMITED-CALENDAR-LIFE MATERIALS INSTALLED IN AN ASSEMBLY

- A. The seller shall furnish cure date, assembly date, part name and number, and manufacture user's identification (if different from part number) for rubber parts (synthetic or natural) installed in assemblies delivered under this PO. This information shall be identifiable with the assembly, and when applicable, component parts within the assembly to which it applies. The assembly date shall be marked on each assembly by attaching a tag.
- B. The seller shall furnish with each shipment of an assembly incorporating a limited-calendar-life material that does not require age control after installation (e.g. adhesive, resins, plastic base paints, etc.) two (2) legible and reproducible copies of a certification stating that the limited-calendar life material was property controlled prior to use and within the shelf-life period when incorporated. The certification shall be identifiable with the assembly (ies) to which it applies and this PO. The certification shall contain the signature and title of an authorized representative of the seller.

Q15 - ACCEPTANCE OF PRODUCTION TOOLING/MATING CONNECTORS

Acceptance of production tooling on this PO will be contingent on inspection and acceptance by a Ducommun Representative. Dimensions of each sample produced from this tooling must conform to the dimension and tolerance as specified on the engineering drawing and specifications on this PO. This inspection shall be under the surveillance of Ducommun Quality with First Article Testing as required to verify conformance to drawing and specification. Verify mating connector will properly mate with cable connector. As required, tooling, measuring and test equipment that requires calibration will be routed to the Ducommun Calibration Department.

Q16 - FIRST ARTICLES

First Articles must be inspected and accepted by Ducommun Quality Assurance prior to production shipment, unless specifically authorized by the buyer. The sample lot of First Articles must be inspected for compliance to requirements in applicable Engineering drawings and specifications as specified on this PO. First Articles must be marked and identified with the part number and all dimensional or test measurements recorded with reference to applicable drawing or specification. Aerospace Standard AS9102 is the recommended reporting methodology for FAI. Formats other than AS9102 shall provide the same information.

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Q17 - SUPPLIER'S DESIGN PRODUCTS

The initial shipment on this PO shall be accompanied by one (1) legible and reproducible copy of applicable specifications, drawings and/or documents.

Q18 - TRACEABILITY TO RAW MATERIALS

All items fabricated under this PO shall be traceable to raw materials used. All traceability and inspection records must be identifiable with raw materials, parts or assemblies to which they are applicable and shall be available upon request or audit by Ducommun or Government representatives.

- A. Raw materials used shall be identified by lot number as well as material type, specification, heat number, etc., and shall be identifiable with lot of raw materials used. When two (2) or more parts are joined in an assembly, the seller shall prepare an assembly parts list identifying how it was fabricated.
- B. All material fabricated by the seller in one lot shall be identifiable to that lot when supplied to Ducommun. The seller shall request from the Buyer authorization to submit materials fabricated in two (2) or more lots to fulfill the PO requirements. These materials shall be segregated and identifiable to the lot in which they were fabricated.

Q19 - SPECIAL HANDLING REQUIREMENTS FOR ESD SENSITIVE COMPONENTS & ASSEMBLIES

All items fabricated, tested, and shipped to Ducommun that are considered ESD sensitive must be handled, packaged, and labeled per ANSI/ESD S20.20.

Pink poly bags and foam shall not be used for packaging in direct contact of parts, instead black poly or silver conductive packing materials shall be used. Pink poly may however be used as an over pack material as long as it does not come in direct contact with the ESD parts.

Q20 - MANUFACTURING READINESS REVIEW

A Manufacturing Readiness Review (MRR) shall be conducted prior to the start of manufacturing. The MRR is held for the purpose of assessing requirements and the review of drawings and processes. At least ten (10) working days prior to the scheduled MRR, the Subcontractor shall submit to Ducommun a proposed agenda and MRR data package of drawing requirements, manufacturing processes and First Article forms (see FAI Q-Note).

Ducommun Engineering and Quality personnel will be required participants and any additional department personnel will be added as needed. Questions, concerns, interpretations and manufacturing methods should be brought up at this time. If questions arise during manufacturing, or the need for a change, the Subcontractor shall notify Ducommun of proposed changes and will obtain written approval from Ducommun prior to implementing the change or deviation. Changes affecting processes, production equipment, tools and programs shall be documented.

Q21 - DISTRIBUTOR HARDWARE CERTIFICATION

Each item on this PO shall have a copy of the original manufacturer's certification for hardware supplied. This certification shall list procurement specification revision levels, lot or date-codes and acceptance test requirements. (Hardware is defined as any item other than computer software.)

Q22 - EXCLUSION OF MERCURY

This requirement must be flowed to sub-tiers. Exclusion of Mercury Certification is required. An example certification is included at the end of this document. Certification states that there was no contamination with mercury or mercury containing compounds of product as raw material, in processing or testing of the item.

Q23 - SOLDERABILITY CERTIFICATION/TESTING REQUIREMENTS

- A. Solderability testing shall be performed per ANSI/J-STD-002 for components and wires. Solderability testing shall be performed per ANSI/J-STD-003 for printed boards. Lot sampling shall be per ANSI/ASQ Z1.4, latest released version or user approved system.
- B. Seller shall maintain solder ability records test records traceable to each shipment and document the completion and acceptance of solder ability testing in accordance with this requirement. Seller shall include a Certificate of Conformance with each shipment giving the part number, lot identification and date that solder ability testing was completed and accepted. It is acceptable for a test record, data sheet, etc., demonstrating successful testing (as stated in Q8) to accompany the Certificate of Conformance. Material without clear objective evidence of the required solder ability testing will be returned at supplier cost.
- C. Seller shall assure that the components are packaged and protected to prevent degradation to the solder coated surface of terminals during storage and transportation. The packaging shall also protect component lead configuration from bending, twisting and inter-tangling. As a minimum, the packaging shall protect solder coated surfaces from degradation due to moisture and other corrosive elements.
- D. Sample of components may be solder ability tested per the above-mentioned solder ability tests. Should a sample fail the solder ability testing, the lot will be rejected and the lot, or part thereof, may be returned to the Seller for replacement or credit as determined by the Buyer.
- E. If Seller is unable to comply with these requirements, Seller shall contact the Buyer for further direction.

Q24 - CONFIGURATION CONTROL

All non-COTS parts supplied with this Purchase Order must have the part revision listed on the Certificate of Conformance (refer to Q1 for C of C Details).

Q25 - FAA SURVEILLANCE

Items on this PO may be subject to FAA inspection at supplier location.

Q26 - RESUBMISSION OF REJECTION MATERIAL

All items rejected by Ducommun and subsequently resubmitted by supplier shall bear an adequate indication of such resubmission on those items or on the shipping documents. Reference shall be made to the Ducommun rejection document and evidence given that the cause for rejection has been corrected and action taken to preclude recurrence.

Q27 - Q27 IS OBSOLETE WITH NO REPLACEMENT

Q28 - FASTENERS QUALITY ACT

Fasteners must be provided in accordance with and certified to public law 101-592, otherwise known as "**The Fastener Quality Act**". This requires tests and certification by an accredited lab, no co-mingling of lot numbers. Lot number identification and certified test reports are required.

Q29 - INDEPENDENT LAB TESTS OF SPECIAL PROCESSES

- A.** This purchase order includes item/items which require special process/processes (to be performed at your facility or your Ducommun approved sub-tier's facility) and independent lab testing of the item/items. The following definition applies:
1. Special Process- A manufacturing process that causes the material processed to undergo a physical, chemical or metallurgical transformation not readily apparent and meets one or more of the following criteria:
 - a. Requires unique control methods because of process complexity or multiple process parameters not readily visible.
 - b. Requires direct monitoring and control of process parameters.
 - c. Requires destructive verification methods.
 2. Special Processes include:
 - a. Aluminum Heat Treat
 - b. Gas Shield Arc Welding
 - c. Dip Brazing
 - d. Nickel Plating
 - e. Gold Plating
- B.** Because the verification of the special process requires destructive testing, it is required that a sample piece or coupon be submitted for independent lab analysis. The schedule for test samples will be chosen when one of the following apply:
1. One sample representing each special process for each part number manufactured whenever a new part number is ordered.
 2. One sample representing each special process for each part number manufactured when a current part number has not been manufactured for 6 months.
 3. One sample representing each special process for each part number manufactured on every new lot or one sample every 3 months.
- C.** The independent lab to be used must be a General Electric approved lab. A listing of approved labs will be furnished and updated as requested by Ducommun. The code identifying an approved lab is S400.
- D.** Upon the completion of a lab analysis, a test report is required from the General Electric approved lab directly to Ducommun either by electronically to joplinquality@ducommun.com or hard copy to at the following address:
- Quality Manager
Ducommun
1505 Maiden Lane
Joplin, Mo. 64802
- E.** The test report results will reflect that the applicable special process/processes have been tested for compliance to the test and test specifications listed in your special process approval letter from Ducommun.

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- F. Documented evidence of this conformity shall include a listing of each material element or test result in the applicable test report. The applicable test report shall also clearly state that all drawing and/or specification requirements have or have not been met and will contain the following statements (as applicable):
1. When all tests have been performed and results meet the drawing and/or specification requirements, the test report shall state: "Conforms to all drawing and/or specification requirements" and shall be signed by a cognizant test lab person.
 2. If a test has been performed and the results do not meet the drawing and/or specification requirements, the test report shall state: "Does not conform to drawing and/or specification requirements" and shall be signed by a cognizant lab person.
 3. If a test has not been performed per the drawing and/or specification requirements, the test report shall state: "Does not conform to all drawing and/or specification requirements, tests xxx not performed" and shall be signed by cognizant lab person.

Q30 - Q30 IS OBSOLETE WITH NO REPLACEMENT

Q31 - Q31 IS OBSOLETE WITH NO REPLACEMENT

Q32 - CALIBRATION CERTIFICATION

Calibration shall be performed and certified to ISO-10012-1, and ANSI/NCSL Z540-1. Items shall be calibrated to the original equipment specification or class unless otherwise noted on the Purchase Order. The records provided shall record the as received status and as calibrated status. Ducommun shall be notified of any item that is nonconforming immediately upon receipt. Calibration lab must be certified to ISO 17025. Personnel performing calibration shall have an annual eye exam.

Q33 - MATERIAL AND SHELF LIFE REQUIREMENTS

Mechanical and Non-Mechanical Material:
Material must be manufactured within two (2) years of the Date of Receipt.

Shelf-Life dated material shall have as a minimum, 75% of the recommended shelf life remaining upon receipt. The seller shall identify each item, package, or container of limited-calendar-life material with the cure or manufacturer date, storage temperature and special handling conditions and the expiration date in addition to the normal identification requirements of name, part or code number, specification number, type, size, quantity, and manufacturing recommended shelf life. The identification, including special handling conditions, shall be recorded on certifications and shipping documents for the material.

Q34 - FOREIGN MATERIAL

Prior to delivery or use of any raw material produced outside the United States, the Supplier is required to submit a request to the Ducommun Buyer for approval to use the material. Ducommun approval may be contingent on on-site evaluation of the source of the material as well as additional material testing and analysis to determine that the material meets all applicable requirements. Ducommun reserves the right to reject and return to the Supplier at Suppliers expense any raw material, or products made from raw material, produced by sources outside the United States.

Q35 - FLIGHT FLOWDOWN REQUIREMENTS

The Contractor and its suppliers, subcontractors, and any sub tier thereof that builds or fabricates or supplies any hardware..., material or subassemblies used in performance of this contract... shall implement the requirements of this plan for Parts, Materials and Processes (PMP) used in hardware supplied as part of the program. Refer to the Honeywell flow down documents:

817AY007114 Rev. (-) Parts, Materials, and Processes Control Plan (A024)
817AY007402 Rev. (-) Parts Selection and Screening Requirements
7114 Rev. (-) Applicable Sections doc.
7402 Rev. (-) Applicable Sections doc.

Q36 - GENERAL ELECTRIC AIRCRAFT ENGINES (GEAE FLOWDOWN REQUIREMENTS)

GEAE is the end user of this purchase order item. GEAE Quality System Requirements for Suppliers (S-1000) applies.

Q37 - Wire and Cable Use and Handling for silver coated copper wire

A. Silver plated wire has special requirements in addition to Q9

B. Definitions:

1. Seal: To seal a Wire end or a splice is to seal off the Wire from a humid environment. A seal shall maintain the internal properties of the Wire to a Humidity of less than 70 %.
2. Desiccant: Enough desiccant shall be used as needed to maintain a sealed environment of less than 70% humidity.

C. At no time during handling shall the wire/cable (collectively "Wire") ends be exposed to moisture or water. A controlled environment shall be maintained throughout the harness/assembly (collectively "Harness") process to eliminate the necessity of end sealing the Wire. No Wire ends shall be terminated that show any signs or other visual evidence of "Red Plague". Once the packaging has been removed in an uncontrolled environment, all manufacturers, distributors, sub-contractors, and partners shall follow the end-seals requirements. Any Wire that has been processed and not terminated for modification, re-work or replacement, that is susceptible to an uncontrolled environment shall be put into a sealed bag with desiccant. Any Wire that is in an uncontrolled environment and not terminated shall be inspected for evidence of Red Plague. The Wire bending radius shall not be violated at any time during spooling, manufacturing, modification, or re-work. The removal/stripping of Wire shall only be accomplished with approved tools, calibrated to assure that the center conductors and plating are not nicked or damaged.

D. Storage of Wire shall be in a controlled environment, which is defined as: Temperature not to exceed 84 degrees F, Humidity not to exceed 70%.

E. Packaging for Wire shall be as follows:

1. AWG sizes 10 and smaller:

- a. Cut and splice all lengths together, then seal all splices.
- b. Seal un-spliced ends.
- c. Use plastic spools only
- d. Bag each spool in clear plastic with desiccant, and then individually box.
- e. All spool and box labels to include the following statement:
"WARNING: MOISTURE DAMAGES WIRE (CABLE) – KEEP ENDS SEALED"

2. AWG sizes 8 and larger the following shall apply:

- a. Cut and splice all lengths together; then seal all splices.
- b. Seal un-spliced ends.
- c. Use 24" wood reels, with plastic wrap extending beyond the flanges and covering the spooled wire with a desiccant.
- d. All reels labeled to include the following statement:
"WARNING: MOISTURE DAMAGES WIRE (CABLE) – KEEP ENDS SEALED"

Continued Next Page....

- F. Un-insulated conductors shall be packaged during storage using Silver Saver vapor corrosion inhibitor (VCI) paper, or equivalent. Un-insulated conductors shall be packaged for shipment using Silver Saver vapor corrosion inhibitor (VCI) paper or equivalent and within polyethylene bags containing desiccant.
- G. The Ducommun Receiving Inspection acceptance standards shall be: no evidence of red plague or fluorine outgassing. Example of document used to inspect is Joplin – QA-1187.
- H. All silver plated wire shall be considered and treated as “Age Dated Material” with a shelf life of two years from the Date of Manufacture (DOM).
- I. The spool/reel must be clearly labeled with DOM and expiration date. In addition the C of C shall clearly state DOM and expiration date 2 years from the DOM.

CAUTION: Any wire insulated with Ethylene-Tetrafluoroethylene (ETFE) shall not be re-sealed after being received. When sealed, this type of insulation can outgas Fluorine that, when mixed with moisture, can create very corrosive hydrofluoric acid. These wires should be kept uncontained or in an open or perforated bag that will allow the Fluorine to escape and in a controlled humidity environments to prohibit moisture from reaching them. Ref. P8658300

Q38 - FLIGHT FLOWDOWN REQUIREMENTS – (PIE Honeywell)

Suppliers, subcontractors, and any sub tier thereof, that builds, fabricates, or supplies any hardware used in performance of this contract shall implement the requirements of this plan for electrical, electronic, electromechanical (EEE) parts, mechanical parts, electrical and structural materials, and processes, used in hardware supplied as part of the program. See Honeywell flow down document

ADT-PN-06-0016
ADT REV August-29-06 Applicable Sections.doc

Q39 - XRAY REQUIREMENTS FOR CONNECTORS USED ON BOEING SM3 PRODUCT Deleted/Not Replaced

Q40 - PROHIBITED MATERIALS PLATING RESTRICTIONS

All products supplied on this purchase order shall be inspected and/or tested to provide objective written verifiable data showing that it is free of plating's, coatings and claddings composed of cadmium, brass, and zinc or solders containing tin with less than 3% lead (Pb) content.

Seller shall certify that these prohibited materials were not used in the plating's, coatings, or claddings used in the construction of products procured on this purchase order. The Seller shall notify the Raytheon buyer a minimum of one year prior to any change in plating, coating, and cladding materials, especially if this will render said products to become noncompliant with this quality note.

The Seller must record in writing all parametric inspection and/or test results and provide it with each shipment of the line item to the Buyer. If the material requires Raytheon source inspection, the data will be made available for review by the Buyer's Quality Representative prior to delivery. The data submitted shall cover the lot of material being shipped.

The submitted data may be in seller format, but shall contain the following minimum information:

1. Seller's name
2. Raytheon purchase order number and revision
3. Drawing/specification/supplier planning revision level
4. Number of items in lot
5. Number of items inspected
6. Sampling Size and data results
7. Lot number and date code

Seller shall randomly select samples from the manufacturer lot in accordance with the sampling plan per Table I. The acceptance number is zero.

Table 1
2.5% AQL Sampling Plan,
Zero-Based Acceptance

Lot Size	Sample Size
1 to 50	5
51 to 90	7
91 to 150	11
151 to 280	13
281 to 500	16
501 to 1,200	19
1,201 to 3,200	23
3,201 to 10,000	29
10,001 to 35,000	35
35,001 to over	40

Compliance to this restriction and requirement is subject to Raytheon review at any time during the performance of this purchase order.

Q41 - EXCLUSION OF PURE TIN

This purchase order specifically DIS-ALLOWS the use of pure tin (Sn) and requires no less than 3% lead (Pb) composition in any plating, finishes, or soldering process / processes alloyed with Tin (Sn). Additionally accompanying Certificate of Conformance from suppliers / vendors must stipulate this requirement. This does not apply to MIL-SPEC parts or Customer Drawings that allow use of Tin (SN) with less than 3% Lead (Pb).

Q42 - WIRE AND CABLE SHELF LIFE, PRESERVATION AND PACKAGING FOR TIN COATED COPPER WIRE

ALL 22759/32 wire (including those used within 27500 cables) will be less than 2 years old from the date of manufacture upon delivery to Ducommun.

Preservation per MIL-DTL-12000 Military unit pack method 10 of MIL-STD-2073

Packaging per ASTM D 3951 commercial

Q43 - NADCAP REQUIREMENTS

This purchase order includes item/items which require special process/processes (to be performed at your facility or your Ducommun approved sub-tier's facility) and independent lab testing of the item/items. The following definition applies:

The Seller is responsible to ensure that all special processes (**to include but not limited to anodizing, plating, X-ray, heat treatment, welding, brazing and electro-deposition of nickel, silver or tin**) performed either by the supplier or their Sub-contractor, be approved by the National Aerospace and Defense Contractors Accreditation Program (NADCAP). This requirement does not absolve the supplier of the responsibility to ensure that all purchase order requirements are being met. Any detailed information regarding NADCAP accreditation process including the audit schedule can be obtained from Performance Review Institute (PRI) at <http://p-r-i.org/nadcap/>.

Where specifications require dimensional results for validation, objective evidence must be reviewed and maintained to assure process requirements are met. No attribute, pass/fail results or general certificates of conformance will be acceptable. Retain all Nondestructive Testing (NDT) records and results, including x-ray film, for a minimum of four (4) years from product shipment. Casting x-ray film is to be retained by the foundry.

Q44 - NORDAM REQUIREMENT

Under this purchase order, purchased items are required to meet all of the requirements as defined in the NORDAM Supplier Quality Manual that is located at the following link. <http://nordam.com/suppliers> then click on Supplier Quality Manual. This is in addition to all of the quality requirements as defined by the quality codes applied by Ducommun.

Q45 - PROHIBITIVE MATERIAL LIST

The following materials shall not be used in the cable assembly:

- A. Acetic Acid cure RTVs (unless approved on a case by case basis by Sensis)
- B. Black Oxide conversion coating (MIL-C-13924)
- C. Cadmium (unless approved on a case by case basis by Sensis)
- D. Zinc or zinc alloy
- E. Bright or satin tin plating (matte tin finish of tin with 3% minimum lead are both acceptable)
- F. Vinyl and PVC sleeving on wiring
- G. Vinyl, PVC, and Kapton insulated wires
- H. Asbestos; asbestos compounds; and asbestos-filled molding compounds
- I. Carcinogens
- J. Chlorofluorocarbons (CFC), e.g., Freon
- K. Flammable materials
- L. Lithium and lithium compounds
- M. Magnesium or magnesium alloys
- N. Mercury or its compounds and amalgams
- O. Polychlorinated biphenyl (PCB)
- P. Radioactive material

Q46 - Raytheon Q-Note Flow down

Breakdown Q46-(QNOTE)-(Q-Note applicable revision is not necessarily latest revision)
The nomenclature following the dash is a Raytheon Quality Note requirement. The latest revision of the Raytheon Quality note can be obtained from the Raytheon site: <http://qnotes.raytheon.com/>
Enter the applicable two digit nomenclature into the site to retrieve the applicable quality requirement(s) being flowed on this purchase order.
The latest released revision or specific revision if so identified with an additional dash reference shall be used.

Q47 - X-Ray Requirements for Cable Assemblies for the BOEING SM3 Program Delete Not Replaced

Q48 - SPECIAL PROCESSES

- A.** This purchase order includes material which requires special processes to be performed as part of the manufacturing process. Special processes, as covered by this clause, shall include the following:
1. Metals Joining Processes
 - a. Soldering
 - b. Welding: Mig, Tig, Stick, Spot
 - c. Brazing
 - d. Spinning
 2. Mechanical Forming Processes
 - e. Crimping
 - f. Riveting
 3. Coating Processes
 - g. Paint
 - h. Plating
 - i. Conformal Coating
 - j. Anodizing
 - k. Lubrite
 4. Bonding
 - l. Adhesives (any process where adhesives are used)
 5. Heat Treating
 6. Vacuum Baking
- B.** Other special processes may be identified by Ducommun for a given purchase order.
- C.** Special processes shall be performed only by sources that have been surveyed, qualified, and approved by the supplier and/or Ducommun and/or the ultimate customer, to perform those processes. The contractor shall provide to Ducommun upon request all documentation showing evidence of special processor qualification and/or certification to perform special manufacturing, assembling, and test processing as required by the contract. Ducommun may elect to use only customer approved sources.
- D.** A special process certification shall be provided with each shipment of item(s) delivered on this contract. Special Process Certifications may be in any supplier format but shall include the following information:
1. Customer's Order number
 2. Part number(s)
 3. Serial and/or lot numbers, of the hardware processed (if applicable)
 4. Material process specification & revision
 5. A certification stating the special process was performed per the applicable drawing/specification requirements.
 6. Organization's name and address
 7. When special processor is other than the Organization, provide a certification of compliance from the special processor stating the special process was performed per the name, address, and be signed and dated by a company official.
 8. Each certification must be signed and dated by a company official of the Organization and/or Processor attesting to the acceptance of the processes performed to the required specification(s).
- E.** The supplier shall retain all records associated with the selection and approval of supplier approved special process providers. Per contract or regulatory agency requirements, records shall be made available to the Customer and/or regulatory agencies upon request. The supplier shall notify the Customer prior to destruction of records relative to this contract.
- F.** The Organization shall insert the substance of this clause, including this sentence, in all lower-tier subcontracts for work performed under this contract.

Q49 - SILVER PLATED WIRE SPECIAL REQUIREMENTS

- A. All silver plated wire shall be considered and treated as “Age Dated Material” with a shelf life of two years from the Date of Manufacture (DOM).
- B. The spool/reel must be clearly labeled with DOM and expiration date. In addition the C of C shall clearly state DOM and expiration date 2 years from the DOM.
- C. In addition to the above requirements, Ducommun quality note Q37 “Silver Plated Copper Wire-Handling, Packaging, and Storage” shall be followed. All other quality notes applied to this PO shall be followed.

Q50 - UTC SPECIAL PROCESSES ASQR-01

Material supplied on this purchase order as relevant to “special processes” defined in ASQR-01, shall be processed per an approved supplier that is also Nadcap accredited. Special Process Certifications provided to Ducommun shall be “original certifications”. Please review ASQR-01 for all applicable requirements. Latest version of ASQR-01 may be accessed via the following link:

<https://www.rtx.com/suppliers/united-technologies-suppliers/united-technologies-asqrd>

NOTE: Ducommun shall file physical records of original certifications after reception.

Q51 - PROHIBITED MATERIAL

All items procured through this agreement to be free of the following materials:

- A. Hexavalent chromium
- B. Cadmium
- C. Beryllium
- D. Asbestos
- E. Mercury
- F. Lead
- G. Lead contained on electronic components and lead-containing solder are exempt from this requirement
- H. Highly toxic materials as defined in 29 CFR 1910.1200 Appendix A
- I. Carcinogenic Materials as defined in 29 CFR 1910.1200 Appendix A
- J. Class I and Class II ozone depleting substances as defined in section 602 of the Clean Air Act

Q52 - Honeywell SPOC Flowdown

- A. Supplier shall comply to the latest revision of Honeywell Supplementary Purchase Order Conditions (SPOC). This manual is available on the supplier portal at: <https://apsl.honeywell.com/apsl/>
- B. If you are a Honeywell Supplier, you should already have access to this site. If your company is not yet registered, contact your Honeywell buyer. If your company does not do business directly with Honeywell, please contact your Ducommun buyer for the latest copy of the SPOC.
- C. The SPOCS that apply to this order can be found on the Purchase Order; i.e. QA-1090 Note Q52 (applicable SPOC numbers).

Q53 - Quality Requirements Flow Downs for Boeing SM3 Connectors

Compliance as specified in QA-1286 is required.

Q54 - Current military/industrial specification

Unless otherwise noted, items shall be supplied in accordance with the latest revision of applicable military/industrial drawing or specification in effect, on date purchase order is issued.

Q55 - DCMA Findings

The subcontractor shall notify Ducommun of DCMA audit or inspection findings or certifying agency OQE findings that impact this contract. This applies to findings at the subcontractor or its sub tier suppliers' facilities. Notification shall be made within 5 days of the finding.

Q56 - COTS substitutions

Commercially available parts (COTS) supplied to this order must be an EXACT match to the part number ordered.

For upgraded, alternate, or equivalent parts considered, the seller must request and receive approval by purchase order amendment prior to shipment and acceptance by Ducommun and its customer. Parts procured to specifications such as MIL, MS, SAE, etc. may be substituted as allowed by the subject specification.

Parts supplied to Ducommun and Ducommun's customers drawings shall be supplied exactly as ordered. Internal parts used on assemblies shall only be those specified on the parts lists. No changes are allowed without written approval.

Q57 - Digital Product Definition (DPD) / Model Based Definition (MBD) Requirements

- A. Ducommun will transfer DPD/MBD to suppliers as required for use in manufacturing and inspection processes.
- B. Suppliers are responsible for the use of DPD/MBD data as well as compliance with any and all security restrictions. Suppliers shall be in compliance with ITAR, MLA, MA, TAA and EAR regulations as required.
- C. Ducommun is responsible for the flow down of DPD/MBD data changes and customer contract requirements. Suppliers are responsible for further flow down of requirements to any sub-tier suppliers as required.
- D. Suppliers must have an established DPD/MBD Control Plan and submit the plan to Ducommun for approval. Prior product/program customer approval of the supplier's DPD/MBD plan may be submitted in lieu of a new plan.
- E. Ducommun reserves the right to audit the DPD/MBD control plan at any time.

Q58 - ROLLS-ROYCE SABRE FLOWDOWN

Under this purchase order, purchased items are required to meet all of the requirements as defined in the latest revision of SABRe Supplier Management System Requirements, This manual is available at: <https://suppliers.rolls-royce.com>. Open "supplier documents" and click on SABRe.

Q59 - UPPAP (UTC PRODUCTION PART APPROVAL PROCESS)

Compliance as specified in ASQR 09.2. Level to be determined by end customer and will be flowed down via the PO.

Q60 - LM APPROVED SPECIAL PROCESSES

Special processes performed on this order shall be performed by an approved Lockheed Martin special processor. A list of approved LM special processors can be found on the current approvals tab in P2P. If you do not have access to P2P please contact your buyer at Ducommun for assistance. A special process is defined as when a product undergoes a physical, chemical, or metallurgical transformation or inspection and conformance to all specification requirements cannot be readily verified by normal inspection methods. Examples are: welding, brazing, soldering, plating, heat treating, magnetic particle, penetrant inspection, etc. To request a LM special process survey, contact your buyer at Ducommun and they will coordinate with LM to request the survey.

Q61 - CONTROL OF QUALITY AS9003

The supplier shall comply with the requirements of AS 9003 – Inspection and test quality system.

Q62 - BACKGROUND CHECKS / FOR OFFICIAL USE ONLY / SECURITY CLEARANCE

The parts being procured to this order are considered FOR OFFICIAL USE ONLY. The supplier shall ensure that access to all drawings, specifications, build instructions, etc. is restricted to only U.S. persons that have (1) a current U.S. security clearance (minimum interim SECRET clearance), or (2) have been the subject of a favorably completed National Agency Check with Inquiries (NACI), or (3) have been the subject of a favorably completed background check pursuant to a background check program that has been submitted to Ducommun's customer, and approved by the U.S. Government.

Q63 - RED PLAGUE CONTROL PLAN IN SUPPORT OF J-STD-001 SPACE ADDENDUM FOR SILVER PLATED WIRE

Silver plated wire has these special requirements in addition to Q37

- A. Wire and Cable shall be shipped and stored in sealed water-vapor-proof packaging with capped ends, activated desiccant, and a humidity indicator card. Silver coated copper wire and cable shall be segregated and dispositioned if the humidity indicator card registers 70% or more RH.
- B. Silver-coated copper conductors that have exceeded a shelf life of 8 years from manufacturing date shall not be used on assemblies fabricated to this standard.

Q64 - REACH Visibility of Compliance

Notice of REACH compliance or non-compliance must be submitted with each part being procured to this order. Refer to REACH links provided in "Prohibited and Restricted Materials" (Form 2052; <https://www.ducommun.com/dco/supplierlinks.aspx>) and determine REACH compliance for each item on purchase order. If a part or component is not compliant to REACH, list the part number and complete all columns in Appendix 1 of Form 2052. If the part or component is compliant, Certificate of Conformance (C of C) for that item must state that the item is REACH Compliant.

Q65 - RoHS Compliance

Part must be RoHS compliant. Notice of compliance must be submitted with each part being procured to this order. Refer to RoHS links provided in "Prohibited and Restricted Materials" (Form 2052; <https://www.ducommun.com/dco/supplierlinks.aspx>) and confirm RoHS compliance for each item on purchase order. Certificate of Conformance (C of C) for each item must state that the item is RoHS Compliant.

Q66 - ODSs and POPs Visibility of Compliance

Notice of ODSs and POPs compliance or non-compliance must be submitted with each part being procured to this order. Refer to ODSs and POPs links provided in "Prohibited and Restricted Materials" (Form 2052; <https://www.ducommun.com/dco/supplierlinks.aspx>) and determine ODSs and POPs compliance for each item on purchase order. If a part or component is not compliant to ODSs or POPs, list the part number and complete all columns in Appendix 1 of Form 2052 and whether the item is not compliant to ODSs or POPs. If the part or component is compliant to ODSs and/or POPs, the Certificate of Conformance (C of C) for that item must state the regulation(s) to which the item is compliant.

Q67 - Honeywell

Parts being procured to this order must comply with the following:

- A. Entire quantity of each item shall be from single lot
- B. Cage Code shall be listed on Certificate of conformance provided with product

Q68 - Pratt & Whitney Canada SQop Flowdown

- A. Supplier shall comply with the latest revision of Pratt & Whitney Canada Supplier Quality Operating Procedure (SQOP-0101) and UTC Supplier Quality Requirements (ASQR-01). These manuals are available on the supplier portal(s) at:
 - 1. <https://eportal.pwc.ca/>
 - 2. <https://www.rtx.com/suppliers/united-technologies-suppliers/united-technologies-asqrd>
- B. Supplier shall state compliance to these requirements on their C of C.
- C. If you are a UTC and Pratt & Whitney Canada supplier, you should already have access to these sites. If your company is not yet registered, contact your UTC/Pratt & Whitney Canada buyer. If your company does not do business directly with UTC and/or Pratt & Whitney Canada, please contact your Ducommun buyer for the latest applicable revision of the ASQR-01 and/or SQOP-0101.

Q69 - UTC ASQR-01 Flowdown

- A. Supplier shall comply with the latest revision of UTC Supplier Quality Requirements (ASQR-01). This manual is available on the supplier portal at:
<https://www.rtx.com/suppliers/united-technologies-suppliers/united-technologies-asqrd>
- B. Supplier shall state compliance to this requirement on their C of C.

Q70 - Weapon Spec Material

- A. All weapon spec material (identified by WS at the beginning of the part number) shall be delivered with following:
 - 1. Certificate of Conformance from the distributor (not applicable if purchase is made directly with the OEM of the material) - See Q1-b for specific requirements.
 - 2. Certificate of Conformance from the OEM.
 - 3. All testing results as identified in the Weapon Spec for the material and each Lot being delivered.
 - 4. A statement of testing acceptance from the OEM (this can be included on the test data, on the C of C, or any other format the OEM chooses to provide).
 - 5. Any other documentation as defined by the Weapon Spec to be provided with each Lot.
- B. The part number listed on the C of C from the distributor and OEM shall reference the PN as identified on the Ducommun purchase order. The C of C may also list the distributor or OEM's internal part number as well.
- C. The test data from the OEM shall reference the Weapon Spec that the material is being tested in accordance with and the Lot# of the material being tested.

Q71 - Leonardo Helicopter QRS-01 Flowdown

- A. Supplier shall comply with the latest revision of LH Supplier Quality Requirements (QRS-01). This manual is available on the supplier portal at:
<https://www.leonardocompany.com/en/suppliers/supplier-portal/helicopters/quality-requirements-for-suppliers>

Q72 - Goodrich Material Requirements

- A. Parts procured under this purchase order must have the following information, at a minimum, on the C of C for the material for each delivery:
 - 1. Suppliers name and address
 - 2. Purchase Order Number
 - 3. Statement "It is hereby certified that all items supplied meet the specification/drawings and substantiating records are available in our file for inspection by authorized customer and/or government", or equivalent.
 - 4. Certification shall be signed by an authorized company representative giving title and date of certification.
 - 5. Manufacturer's Date Code/Lot Code.
- B. Authorized Distributors Only: Materials received from authorized distributors must have a C of C from the distributor per Q1 and Q72-A, and must include a legible copy of the original OEMs C of C.
- C. Materials delivered to Ducommun on the purchase order shall not be more than 4 years from the date of manufacture.
- D. The following companies must not be utilized to fabricate product supplied on this purchase order:
 - 1. ANCO TECH INC./ANCO TECH ACQUISITION 7/03,
 - 2. WEST COAST ALUMINUM/TEMPERFORM 7/03,
 - 3. HYDROFORM USA 5/05,
 - 4. WESTERN TITANIUM 6/04,
 - 5. AIR CAPITOL PLATING 4/05,
 - 6. GROSS INSTRUMENT CORP. 3/06,
 - 7. M&M INTERNATIONAL AEROSPACE 3/06.
- E. Supplier shall utilize the latest revisions of any industry specifications required to manufacture materials on this purchase order.

Q73 - Moog SQR-1 Flowdown

Supplier shall comply with the latest revision of Moog's Aircraft/Industrial Group Supplier Quality Requirements (SQR-1). This manual is available on the supplier portal at:

<https://www.moog.com/suppliers/supplier-quality-requirements.html>

Special Workmanship Criteria – Clause: S512 Rev F (or greater)

Q74 - Collins Landing Systems Special Process

- A. All special process suppliers shall be NADCAP accredited and be listed on Collins Doc 200 for the following processes:
 - 1. Chemical Processing
 - 2. Coatings
 - 3. Heat Treating
 - 4. Material Testing Laboratories
 - 5. Nonconventional Machining and Surface Enhancement
 - 6. Nondestructive Testing
 - 7. Welding

A copy of Doc 200 can be found at <https://utcaerospacesystems.com/supplier-documents/> or upon request from Ducommun.

Q75 - Aerojet Rocketdyne Flowdown

- A. Supplier shall comply with the latest revision of Aerojet Rocketdyne Supplier Quality Requirements (AR1). This manual is available on the supplier portal at:
<https://www.rocket.com/supplernet/business-ar/qa-terms-and-conditions>

Q76 - William International Document Retention

Supplier shall maintain documents associated with this order for 20 years. After 20 years the documents shall be disposed of per the supplier's internal record retention requirements.

Q77 - APQP/PPAP

For Non-COTS parts: Supplier shall assemble and submit a PPAP file to Ducommun Quality Assurance in accordance with AS9145. The requirements of this clause are applicable to the part listed on the PO and to all lower-level detail parts which comprise the part(s) on the PO. This includes parts manufactured, assembled, tested, and/or inspected at sub- tier suppliers. The PPAP submission shall be prior to, or concurrent with, the first delivery of product.

Ducommun requirements for supplier PPAP submissions:

1. The PPAP elements shall be compiled and submitted, including Design FMEA (DFMEA) (when the supplier is the design agent), Process FMEA (PFMEA), Process Flow Diagram, Control Plan, Gage R&R/Initial Process Studies (for KC's and Characteristics of Interest (CI's per item 4), Dimensional data & Part Submission Warrant (PSW). The submission should be emailed to joplinquality@ducommun.com or hard copy to at the following address:

Quality Manager
Ducommun
1505 Maiden Lane
Joplin, Mo. 64802

2. The Initial Process study should be conducted by measuring the entire first production lot. If the lot has greater than 30 pieces, then only 30 pieces need to be part of the study. If the lot size is smaller than 30 pieces, contact Ducommun Supplier Quality Engineering. The supplier shall demonstrate process capability with a Capability Index of at least 1.0 with a goal of 1.33. If the index is less than 1.0, the successive production lot(s) shall have a process study conducted with the index is greater than 1.0.

3. The supplier shall identify design/process related KC's and CI's on the PFMEA and/or Control Plan.

4. Where the part does not have any KC's the supplier shall select part characteristics for which process capability is to be demonstrated. It is expected that the supplier shall select at least one CI. A CI is defined as a characteristic with the highest manufacturing risk as identified in the PFMEA. A Ducommun Supplier Quality Engineer can assist the supplier with selection.

CERTIFICATE OF CONFORMANCE

FROM: _____ INVOICE NO: _____

TO: Ducommun (DATE) _____ **ATTENTION: RECEIVING INSPECTION**

BUYER'S P.O. NO. _____ QUANTITY THIS SHIPMENT _____

PART NAME: _____ PART NO.: _____ Rev. (as applicable) _____

SELLER HEREBY CERTIFIES AS FOLLOWS:

1. Material(s) and parts, furnished against the above purchase order, were produced from material procured from a buyer qualified approved source for the production of such parts or from materials from which seller has available for examination, evidence, including chemical and physical test reports, to assure conformance to all applicable Specifications.
2. All process, required in the production of parts or materials furnished against the above purchase order, were performed by equipment and personnel specifically qualified or certified by buyer, seller or cognizant government agency by an applicable government or buyer's specification.
3. All materials and parts, furnished against the above purchase order, were tested and inspected to assure conformance to all applicable drawings and specifications.

**MATERIAL OR
PROCESS**

**CERTIFICATION
DATE**

**SPECIFICATION
& CHANGE LETTER**

SOURCE & ADDRESS

NAME: _____ TITLE: _____ SIGNATURE: _____
PLEASE TYPE OR PRINT

**Example of:
CERTIFICATE AS TO EXCLUSION OF MERCURY**

This certificate shall be completed by the seller and submitted to the Buyer issuing this purchase order for each shipment of supplies as identified by the Seller below:

The Seller hereby certifies that:

- A. The supplies furnished under this purchase order contain no metallic mercury or mercury compounds.
- B. The Seller has taken reasonable steps to insure that the supplies furnished under this purchase order are not contaminated with metallic mercury or mercury compounds.

SELLER: _____ DUCOMMUN PURCHASE ORDER NUMBER: _____

PACKING SLIP NUMBER: _____ DATE OF INSPECTION: _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE

REVISION HISTORY			
REV.	SHEET AFFECTED	REVISION DESCRIPTION	APPROVAL/ DATE
BL	All H J Codes	Overall spelling and format fixed and removed Berryville references as they have their own document. Updated to AS-91002 Replace Lockheed Q4R link Q-10 Replace "MIL P-116" with MIL-STD-2073-1C, Q23 A Changed 2003 to latest revision, Q39 delete, Q47 delete, Q68 & Q69 replaced UTC links with current links.	Roseann Spann Josh Taylor Dave Norman 1-26-21
BM	Title Q37-G	Added Berryville references back into document.	Roseann Spann Dave Norman Mike Walden 2-25-21
BN	12 23	Q29 updated to better define test schedule Q73 added Q74 added	Roseann Spann J Taylor 9/30/22
BP	All	Q1.K: Was: <ol style="list-style-type: none"> 1. If a material has a defined shelf life, the <u>shelf life</u> information must be included with material upon receipt. The preferred location for all information is the certificate of conformance but is not required and may be located in an alternate location. The information shall include, but is not limited to: <ol style="list-style-type: none"> a. Date of Manufacture b. Date of Expiration or other <u>shelf life</u> expiration definition (example 12 months for DOM or 12 months from date of receipt) c. Lot Number d. Storage temperature and conditions (if applicable) e. Special handling conditions (if applicable) Is: <ol style="list-style-type: none"> 1. If a material has a defined shelf life, the <u>shelf life</u> information must be included with material upon receipt. The preferred location for all information is the certificate of conformance/shipping paperwork but is not required and may be located in an alternate location. The item, package, or container, in addition to the C of C/shipping paperwork, shall also be clearly labeled. The information shall include, but is not limited to: <ol style="list-style-type: none"> a. Normal material identification requirements (name, part or code number, specification number, type, size, quantity, etc. b. Date of Manufacture or Cure (as applicable) c. Date of Expiration or other <u>shelf life</u> expiration definition (example 12 months from DOM or 12 months from date of receipt) d. Lot Number e. Storage temperature and conditions (if applicable) f. Special handling conditions (if applicable) 2. The <u>shelf life</u> dated material shall have as a minimum, 75% of the recommended shelf life remaining upon receipt. Q1.N: added Q13: Deleted contents and added "See section Q1.K above" Q37: added H and I Q40.6: added "and data results" Q73: Added "Special Workmanship Criteria – Clause: S512 Rev F (or greater)" Q74: adjusted sub bullet number to match the remainder of the document. Q75 – Added	J Taylor 2/1/23 B Lehman 2/1/23
BQ	All	Removed Berryville References due to plant closure Q76 added Q77 added	B Lehman 4/18/24 J Taylor 4/18/24
BR	Q1.H	Removed Q1.H.2 as it was not fully vetted for release. Also was not captured on revision history change.	B Lehman 4/19/24 J Taylor 4/19/24