1. Purpose and Scope

1.1. This document includes all Quality Assurance Provisions and definition available for inclusion on purchase orders and subcontracts issued by Northrop Grumman Armed Reconnaissance (AR) Operating Unit (OU).

2. Responsibilities and Authorities

2.1. Articles defined in the purchase order will not be accepted if certifications, documentation, test data, or reports specified on the purchase order are not submitted.

2.2. These Quality Assurance Provisions apply when specified on purchase orders originally issued on or after the most recent effective date in the record of changes. Unless otherwise specified in the purchase order, purchase orders issued prior to that date should use the Quality Assurance Provisions in effect at the time of the original purchase order was issued.

3. References

3.1. References

3.1.1. MIL-STD-45662A
3.1.2. ANSI/NCSL Z540-1
3.1.3. ISO 10012-1
3.1.4. ISO 17025
3.1.5. National Institute of Standards and Technology (NIST)
3.1.6. ISO 9001
3.1.7. AS9102
3.1.8. ASME Y14.41
3.1.9. Government Industry Data Exchange Program (GIDEP)
3.1.10. CFR Parts 21, 25, 91 and 145

4. Quality Assurance Provisions and Definition

23QC-1: CERTIFICATE OF CONFORMANCE

Shipment made against Purchase Order (P.O.) must contain a Certificate of Conformance, signed by an authorized agent of the company, attesting that all applicable specification, drawing and P.O. or Work Order requirements have been met. The Certificate of Conformance must include the P.O. number, the Northrop Grumman AR part number and revision letter (listed on the P.O.), the quantity of pieces in the shipment, the serial number and/or date code, as applicable. Data supporting the Certificate of Conformance must be on file subject to review by Northrop Grumman AR.

- Name of manufacturer
- Purchase Order Number and if applicable the release number.
- Item name and identification number (s) (i.e. Part Number, Lot Number, Serial Number)
- Applicable Drawing/Specification number(s) and Revision Letter
- Authorized waivers or changes

The Certificate of Conformance shall carry a statement to the effect that:
"We hereby certify that the Materials/Products/services furnished in this order were made or performed in accordance with and conform to the applicable specification(s) and/or drawing(s) as stipulated in Northrop Grumman AR Purchase Order."

If Supplier is not a manufacturer (or service provider), in addition to the Supplier’s C of C, the following shall also be included:

- A manufacturer’s (or service provider’s) C of C
- A Certificate of Conformance with supply chain traceability or a certificate of conformance that provides evidence that the parts were obtained directly from the Original Component Manufacturer (OCM), approved manufacturer or authorized distributor.

23QC-2: ACCESS FOR FACILITY AUDIT AND SURVEILLANCE

During performance on this order, supplier’s Quality Control, Inspection System and Manufacturing Processes are subject to review, and surveillance by authorized representatives from Northrop Grumman AR and our customer’s organization.

23QC-3: GOVERNMENT SOURCE INSPECTION (GSI)

U.S. Government source inspection shall be required prior to shipment from Supplier’s facility. Upon receipt of this procurement document, Supplier shall immediately notify and provide a copy of the procurement document to the U.S. Government representative, who normally services Supplier’s facility, so appropriate planning for U.S. Government source inspection can be accomplished.

- If a U.S. Government representative does not normally service Supplier’s facility, the nearest Army, Navy, Air Force, or Defense Agency inspection Office shall be contacted.
- In the event a U.S. Government representative cannot be contacted, Buyer shall be notified immediately.

23QC-4: SOURCE INSPECTION/TEST

Buyer shall be present (or provide a representative) to perform source inspection at Supplier's facilities or where designated in the Procurement Document prior to shipment.

- Inspection and test of the articles defined in this contract shall be performed by Supplier, and shall be subject to witnessing by Buyer (or representative).
- Supplier shall provide inspection/test data and reports to Buyer’s Source Inspector indicating which characteristics, parameters, dimensions, etc., were actually tested/inspected for validation to Buyer’s specification/drawing requirements.
- After Buyer’s Source Inspection, any rework or test of the item, including any nonscheduled entry, such as removal of a panel, cover, or enclosure shall void the source inspection.
- For any nonscheduled entry, rework, or test, Supplier shall request Buyer to repeat source inspection.
- Buyer shall be notified at a minimum of seven (7) workdays prior to commencement.
of these activities to allow for arrangements for Buyer and/or Buyer’s quality representative to be present during inspection and test.

23QC-5: QUALITY MANAGEMENT SYSTEM
Supplier shall provide and maintain a Quality System that is registered to ISO 9001. Supplier’s capability to perform satisfactorily to these requirements shall be demonstrated by having an ISO Certification from an accredited registrar.

- Buyer shall reserve the right to conduct an assessment of Supplier’s Quality System.

23QC-6: INSPECTION SYSTEM
The supplier shall provide and maintain a documented inspection system which will assure that all supplies and services submitted to Northrop Grumman AR conform to Purchase Order requirements whether manufactured or processed by the supplier, or procured from subcontractors or vendors. The inspection system is to include at a minimum, a calibration system, document and record control, inspection result records, control of nonconforming products, and a corrective action system.

23QC-7: GOVERNMENT REVIEW OF PERFORMANCE
During performance of this order, supplier’s Quality Control, Inspection System, Manufacturing Processes, Inventory control and traceability documentation are subject to review and verification by authorized Government Representatives. Government inspection, prior to shipment is not required unless otherwise notified. Supplier shall provide a copy of this order upon request.

23QC-8: CERTIFICATE OF ANALYSIS
Certificate of Analysis is required on the type of Material/Product Northrop Grumman AR orders as indicated below:
- Rubber, composite, cements, etc.
- Fabricated/machined items (fixtures, bead seat/clamp castings, special bolts/screws, etc.)

This Certificate must contain the following information (if applicable):
- Name of Manufacturer
- Purchase Order Number, and if applicable, the release number
- Material name, date of manufacture and identification number (i.e. lot number, heat number etc.).
- Applicable Drawing/Specification number(s) and Revision Letter
- Authorized waiver or changes

The Certificate of analysis shall carry a statement to the effect that:
“We hereby certify that the materials furnished on this order were made in accordance with and conform to the applicable specification(s) and/or drawing(s) as stipulated in Northrop Grumman AR Purchase Order. Chemical, mechanical, and physical test
results are as follows or attached.

The Certificate of Analysis must include the signature and position of an authorized agent of the company.

23QC-9: CERTIFICATION OF PROCESS

Supplier must submit a statement attesting that processes such as welding, x-ray, magnetic particle inspection, penetrant inspection, heat treating, soldering, plating, anodizing etc., satisfy the requirements of applicable specifications (including, where applicable, certification of process personnel.) Specify quantity of parts in shipment. Records substantiating the foregoing must be available for examination by Northrop Grumman AR.

- The Certification of Process must include the signature and position of an authorized agent of the company.

23QC-10: TEST/INSPECTION DATA

When Buyer’s specifications or Procurement Document require test data to be recorded during the performance of acceptance testing, a paper or preferably electronic copy of the recorded data, showing evidence of Supplier’s inspection and verification of performance, shall accompany each shipment. Data shall meet the requirements of Buyer’s specifications or Procurement Document and, at a minimum, be identified with:

- Buyer’s Procurement Document number and change notice number
- Part number
- Lot numbers, serial numbers, or date codes of items tested
- Drawing/specification and revision used
- Type of test performed
- Identification number of test equipment used
- Total quantity of items tested, quantity of items accepted, and quantity of items rejected
- Any codes, keys, or other information necessary to interpret Supplier’s data
- Notations that readings are within specifications limits or that tests have been satisfactorily performed will be acceptable only for those tests performed on automatics or go/no go equipment lacking quantitative read out capability.
- All automatic hardware and software tests are subject to validation - including fault insertion by Northrop Grumman AR.
- Test/Inspection Data must include the acceptance identification of an authorized agent of the company.

Dimensional report indicating which characteristics, parameters, dimensions, etc., were actually tested/inspected for validation to Buyer’s specification/drawing requirements.
23QC-11: DESTRUCTIVE ANALYSIS SPECIMENS
Supplier shall supply one specimen (configuration to be specified by Northrop Grumman AR) with each lot shipped for destructive testing of applied coatings/plating's/finishes, etc. This specimen shall have been processed by supplier with the lot it represents. Prominently identify specimen and mark packing slip “DESTRUCTIVE ANALYSIS SAMPLE ENCLOSED”.

23QC-12: MATERIAL PACKAGING
Supplier shall incorporate good commercial practices for preservation and packaging of all articles that apply to this Procurement Document. Supplier shall identify each package permanently and legibly with Procurement Document number, manufacturer's name, date shipped, and packing sheet number. Packaging shall be selected, to the extent necessary, to provide protection from physical and environmental damage during shipping and handling.

- Cushioning materials shall be applied, as required, to protect and to restrict movement of items.

All materials which are volatile, toxic, or emit fumes, which are harmful to human health, shall be properly contained in accordance with applicable health and safety requirements. Supplier shall take appropriate measures to prevent handling damage, from preparation for shipment through receipt (i.e., palletizing, shrink wrapping, or otherwise securing materials for shipment to prevent degradation during transit).

- Containers shall be plainly marked as to its contents with appropriate warnings, precautions, instructions, and storage conditions.
- If applicable, Material Safety Data Sheet (SDS) shall be included with each shipment.

If applicable, electronic assembly shall be packaged in a manner to prevent Electrostatic Discharge (ESD) and physical damage to the electronic assembly during handling and shipping.

23QC-13: FIRST ARTICLE INSPECTION (FAI)
Inspection and acceptance by Buyer of the first article shall be required prior to the start of fabrication of a new product or supplier, if it has been 24 months or more since last product was produced, or a change to form, fit, or function of the product has occurred.

- Where product does not meet the intent of "first production run", as defined within AS9102, 100% of all product characteristics shall be inspected.
Supplier shall submit a First Article Report on an AS 9102 First Article Form, or equivalent, to Buyer demonstrating compliance with the requirements in the Procurement Document and referenced documents (refer to AS9102 and ASME Y14.41 for guidance).

- The report shall reflect 100 percent inspection verification of all drawing characteristics.
- The report shall delineate each drawing characteristic and specify the corresponding actual measurement results.
- The report shall provide evidence of acceptance by the Supplier’s authorized Quality Assurance representative.
 Supplier shall notify the Buyer the opportunity to witness the performance of First Article Inspection/Testing (14) days in advance of date when material is ready.

The end item will be identified as a First Article part and will be packaged separately from the remaining lot shipped. A First Article Inspection Report will accompany the First Article part when shipped.

23QC-14: CALIBRATION

When measuring and testing an item, the Supplier shall be responsible for validating the accuracy and stability of tools, gages, and test equipment used to demonstrate that an item conforms to the requirements specified in the Procurement Document. Documented schedules shall be maintained for periodic calibration of measurement and test equipment to adequate standards. Objective evidence of calibrations shall be recorded and made available for Buyer’s review.

Supplier shall be responsible for the calibration, accuracy, validation, and maintenance of any equipment, tooling, or gauges utilized by Supplier to produce, inspect, or test articles to be delivered under this Procurement Document.

Supplier’s equipment calibration system shall be in accordance with one of the five requirements listed below:

- MIL-STD-45662A
- ANSI/NCSL Z540-1
- ISO 10012-1
- ISO 17025
- NIST

23QC-15: REWORK OR REPAIR REQUIREMENTS FOR ELECTRONIC ASSEMBLY

When an electronic item is returned to a Supplier for troubleshoot and/or repair, the Supplier shall provide a document that outlines what actions were taken to return the item to a serviceable condition; minimum information requirements shall include the following but not limited to:

- Procurement Document number
- Part number
- Discrepancy from customer
- Fault found
- Actions taken to repair discrepancy
- Acceptance test procedure used to verify fault has been eliminated
- A Teardown and Failure Analysis Report must be provided at the completion of evaluation and be physically sent along with the unit.
- Certificate of Compliance or FAA form 8130 indicating the electronic assembly was reworked or repaired in accordance with applicable OEM requirement(s).
- The electronic assembly shall be packaged in a manner to prevent Electrostatic Discharge (ESD) and physical damage to the electronic assembly during handling and shipping.
23QC-16 COUNTERFEIT PARTS RISK MITIGATION

Supplier shall be a member of Government Industry Data Exchange Program (GIDEP), if eligible, and review and take appropriate corrective and preventive actions on all GIDEP alerts applicable to material offered for re-sale. This includes alerts for suspect/counterfeit conditions as well as routine technical issues.

- If ineligible for GIDEP participation, the Supplier shall screen other credible sources of counterfeiting information to avoid such purchase and use.

The supplier shall have documented processes, appropriate to the organization and the product, for the prevention of counterfeit or suspect counterfeit part use and their inclusion in product(s) delivered to Northrop Grumman AR.

- Training of appropriate persons in the awareness and prevention of counterfeit parts
- Application of a parts obsolescence monitoring program
- Controls for procuring product from original or authorized manufacturers authorized distributors, or other approved sources
- Requirements for assuring traceability of parts and components to their original or authorized manufacturers
- Monitoring of counterfeit parts reporting from external sources
- Quarantine and reporting of suspect or detected counterfeit parts.
- Acquired suspect counterfeit parts are reported to GIDEP
- Provided suspect counterfeit parts related to its Northrop Grumman contract are immediately reported to the Northrop Grumman and take appropriate corrective and preventive actions on all suspect counterfeit parts

23QC-17 AIRCRAFT-RELATED SUBCONTRACTORS AND SERVICE PROVIDERS

Subcontractors shall provide service to Northrop Grumman AR as applicable.

- Service to be accomplished in accordance with CFR Parts 21, 25, 91 and 145 as appropriate.
- All data used for design, installation and/or maintenance shall be FAA approved.
- FAA Form 337, aircraft logbook entry for maintenance, installations and or modifications must be provided to Northrop Grumman AR and/or entered into the aircraft’s records upon completion.
- Aircraft shall be received, by Northrop Grumman AR, in a Standard Airworthiness configuration after modification.
- All subcontractors must complete “Northrop Grumman AR Subcontractor Surveys” and submit all required documents as requested
- Propeller and engines must have a logbook provided to Northrop Grumman AR upon receipt.
23QC-18 MATERIALS PURCHASED WITH EXPIRATION DATE (SHELF LIFE ITEMS)

Supplier shall provide a copy of the manufacturer's Certificate of Conformance (C of C) that defines the shelf life characteristics of any material that fits into this category. Identification shall include the following information as a minimum:

- Date of manufacturer
- Batch and/or lot numbers
- Date of expiration
- Procurement Document number
- Any special storage conditions for the material
- Material Safety Data Sheet (SDS) shall be included with each shipment.

Materials or articles shall be supplied to the Buyer with no less than 75% of its useful life or cycles remaining; however, Supplier shall verify that sufficient operating life and environmental margin remains to meet the specified requirements of the procurement document.

- If Buyer so chooses they may accept material with less than 75% of the shelf life remaining due to critical need and will document this action on the Procurement Document directing the Supplier to ship the material.

23QC-19 RAW MATERIAL DOCUMENTATION REQUIREMENTS

Shipment of materials, whether raw, semi-finished, or finished, shall be accompanied by a Certificate of Conformance from Supplier, stating at a minimum:

- Material identification by specification number and material conditions, where applicable
- The raw material manufacturer's or mill's lot or batch number
- A statement of raw material conformance to applicable requirements
- The name and location of the raw material manufacturer or mill

23QC-100 QUALITY CLAUSE GROUP ONE

Quality Clause Group One consist of:

- 23QC-1 CERTIFICATE OF CONFORMANCE
- 23QC-6 INSPECTION SYSTEM
- 23QC-12 MATERIAL PACKING

23QC-200 QUALITY CLAUSE GROUP TWO

Quality Clause Group Two consist of:

- 23QC-1 CERTIFICATE OF CONFORMANCE
- 23QC-6 INSPECTION SYSTEM
- 23QC-12 MATERIAL PACKING
- 23QC-16 COUNTERFEIT PARTS RISK MITIGATION
23QC-300 QUALITY CLAUSE GROUP THREE
Quality Clause Group Three consist of:
- 23QC-1 CERTIFICATE OF CONFORMANCE
- 23QC-6 INSPECTION SYSTEM
- 23QC-8 CERTIFICATE OF ANALYSIS
- 23QC-9 CERTIFICATE OF PROCESS
- 23QC-10 TEST/INSPECTION DATA
- 23QC-12 MATERIAL PACKING

5. Revision History

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