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# **Defense Systems Supplier Quality Assurance Requirements (Q-Clauses)**

Q1-4-04-DSF

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**Director, Supplier Quality and Mission Assurance**

## Revision/Change Record

Rev	Date	Revision/Change Description	Sections Affected
00	1/1/2021	Initial Release	All
01	6/24/2021	Miscellaneous redlines throughout. SQ01: Added guidance; added L.5; added to M.1; updated M.3; added website links to R; added guidance to T and corrected OASIS website reference. SQ05: Added C. SQ06: Added C. SQ12: Updated guidance. SQ17: Updated title. SQ20: Updated guidance; added D.5, E, F, G, H. SQ22: Updated guidance. SQ23: Updated B. SQ24: Updated A. Added SQ31. SQ34: Updated A. Added SQ40. SQ42: Updated guidance. SQ43: Updated B.1, B.1.a, D, and various redlines. Added SQ45.	1.0, 2.0, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, SQ01, SQ02, SQ04, SQ05, SQ06, SQ08, SQ09, SQ11, SQ12, SQ13, SQ14, SQ17, SQ18, SQ19, SQ20, SQ22, SQ23, SQ24, SQ25, SQ27, SQ30, SQ31, SQ34, SQ35, SQ36, SQ37, SQ39, SQ40, SQ41, SQ42, SQ43, SQ44, SQ45, 4.0
02	12/16/2021	SQ31: Corrected document reference and link.	SQ31
03	11/4/2022	SQ43: Removed AS6081 and replaced with AS6171. AS6171 is a newer standard for the determination of material authenticity that offers more detailed and rigorous test and inspection methods for identifying suspect electronic components.	SQ43
04	6/27/2024	3.5: Added to SQ01. U as a flow down requirement. Major updates/additions to add Weapon Systems codes to document. Changed from CSMR to GBMR.	3.5, SQ01, SQ02, SQ03, SQ04, SQ05, SQ06, SQ08, SQ09, SQ11, SQ13, SQ20, SQ24, SQ26, SQ31, SQ33, SQ34, SQ35, SQ37, SQ39, SQ44, SQ46, SQ47, SQ48, SQ49, SQ50, SQ51, SQ52, SQ53, SQ54, SQ55, SQ56, SQ57, SQ58, SQ59, SQ60, SQ61, SQ62, SQ63, SQ64, SQ65, SQ66, SQ67, SQ68

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## 1.0 Purpose

This document establishes the procurement quality requirements (Q-Clauses) that **shall** be incorporated into the Procurement Document, and which **shall** govern performance of the Seller issued Procurement Document. The elements of this document supplement those requirements levied by **Northrop Grumman** Global Supply Chain (GSC) within the Terms and Conditions (Ts&Cs).

## 2.0 Definitions

- A. Buyer: **Northrop Grumman** GSC Buyer or Subcontract Administrator who has been issued delegation of procurement authority to make commitments for the procurement of material and services. Throughout this document, the term 'Buyer' is interchangeable with the term 'Subcontract Administrator'.
- B. Seller (also known as supplier, subcontractor, vendor): The legal entity that is providing products and/or services and has entered into a contractual relationship for providing products and/or services to **Northrop Grumman** through a Procurement Document.
- C. Procurement Document: The Purchase Order (PO) or Subcontract between **Northrop Grumman** and Seller.
- D. Item: The product or service as specified in the Procurement Document.
- E. Rework: A documented and approved process that brings nonconforming item back into conformance with defined specifications, standards, or requirements.
- F. Repair: An operation performed to fix and return a nonconforming product to a condition that meets form, fit, and function but not into full compliance with the original requirements.
- G. Latent Defect: A flaw or other imperfection in an item that does not become evident or active until the item is used.
- H. Commercial Item: Any item, other than real property, that is of a type customarily used by the general public or by non-governmental entities for purposes other than governmental purposes, and has been sold, leased, or licensed to the general public; or, has been offered for sale, lease, or license to the general public.
- I. Commercial Off the Shelf (COTS) Item: Any item of supply (including construction material) that is a commercial item (as defined in the paragraph above) existing in substantial quantities in the commercial marketplace, and that is offered for sale for governmental purposes without modification and under the same requirements, specifications, Ts&Cs, and standards in which it is sold in the commercial marketplace. This excludes bulk cargo, as defined in 46 U.S.C. 40102(4), such as agricultural products and petroleum products.
- J. Independent Distributors of Electronics Association (IDEA): A non-profit trade association representing Independent Distributors that have formally committed to adhere to prescribed quality and ethical standards. The stated purpose of IDEA is to

promote the independent distribution industry through media advocacy; to improve the quality of products and services through a quality certification program, educational seminars, and conferences; and to promote the study, development, and implementation of techniques and methods to improve the business of Independent Distributors.

- K. Government-Industry Data Exchange Program (GIDEP): A cooperative activity between the U.S. Government, the Canadian Government, and Industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information essential during research, design, development, production, and operational phases of the life cycle of systems, facilities, and equipment.

### 3.0 Standard Quality Requirements

This section applies to all procurements. Individual Supplier Quality Assurance Requirements (SQAR) or Q-Clauses are assigned as necessary and are in addition to the requirements of this section. Unless otherwise noted, SQ01, *General Quality Assurance Requirements*, **shall** be applicable for all procurements.

#### 3.1 Supplier's Responsibility for Conformance

Northrop Grumman and its customers expect our suppliers to deliver material that is 100% compliant with all Procurement Document Requirements. If a supplier has any changes to drawings, or specifications noted on the drawing, processing, materials, or contractual requirements of the Procurement Document, a **Supplier Request for Information/Change (SRIC) or Request for Change/Information (RC/I)**, Form P0-F030, **shall** be initiated by the supplier to request assistance. **The SRIC and RC/I process, and their** requirements are documented in SQ01-T. If SQ31, *Supplier Information Request (SIR)*, is required, follow SQ31 instead of SQ01-T. A RC/I, **SRIC**, or SIR is required for each part number / Procurement Document for which the supplier is requesting additional information.

#### 3.2 Specialty Metals

**Northrop Grumman** requires products containing specialty metals to be compliant with Defense Federal Acquisition Regulation Supplement (DFARS) 252.225-7009, *Restriction on Acquisition of Certain Articles Containing Specialty Metals*. SQ44, *DFARS 252.225-7009 Specialty Metals*, **shall** be applicable for all products containing specialty metals.

#### 3.3 Counterfeit Prevention

The requirements of SQ43, *Counterfeit Prevention for EEE Part Suppliers and Distributors*, **shall** be met by all suppliers of Hardware; Electrical, Electronic, and Electromechanical (EEE) Parts; Components; Assemblies; and Systems. If required, SQ40, *Counterfeit Prevention for Non-EEE Part Suppliers and Distributors*, **shall** be met by all suppliers of non-electrical parts. The requirements of SQ09, *Requirements for Distributors*, **shall** be met by all suppliers of non-electrical parts, including, but not limited to: fasteners, nuts, washers, springs, O-rings, inserts, and pins.

### 3.4 Exception to Rejections

In the event a supplier does not accept the responsibility for a discrepant condition, the supplier **shall** initiate a letter of exception to their Buyer. The letter **shall** make full reference to applicable documents and be specific in defining the area of exception.

### 3.5 Shared Suppliers

**Northrop Grumman** accepts other Northrop Grumman Delegated Source / Supplier Self Inspection programs for shared suppliers. Northrop Grumman and its customers retain the right to impose inspection requirements independent of the supplier's Delegated Source authority.

**NOTE:** Delegated suppliers are not exempt from audits and on-site verification of corrective action. Material currently undergoing corrective action investigation processing up to and including verification of corrective action **shall not** be shipped without the authorization of Northrop Grumman Supplier Quality or Mission Assurance.

## SQ01 General Quality Assurance Requirements

**Guidance:** A through U **shall** apply when SQ01 is required. T will not apply when SQ31 is required. H will not apply when SQ46 is required. Other exclusions will be noted in the Baseline Quality Requirements Planning System (BQRPS) Project Table or on the Procurement Document.

**NOTE:** C4 Missile Defense (C4MD), Mission Readiness and Protective Services (MRPS) business units and Huntsville Manufacturing Center (HMC) operations within the Global Battle Management and Readiness (GBMR) Division must use SQ31 instead of SQ01-T. Armament Systems (AS) Division must use SQ46 instead of SQ01-H.

### A. PROHIBITED PRACTICES

1. Unauthorized Repairs: Seller **shall not** repair any damaged item, or any item found to be faulty during manufacturing or that fails to meet Northrop Grumman specification/drawing requirements, without Buyer's written approval, except when the nonconformance is minor and Material Review Board (MRB) authorization has been granted by Northrop Grumman. Seller is not authorized to perform MRB activities on nonconforming materials without Buyer authorization.
2. Change in Approval, Drawing, Processes, Materials, or Procedures: Seller **shall not** change any drawing, process, material (including sub-tier supplier parts), or procedure without Buyer's prior written approval, if such drawing, process, material, or procedure was used to qualify items or which was used by Seller to become a qualified source.

**NOTE:** The following sub-articles do not apply to a supplier that has design authority over their own products.

3. Seller **shall** notify Buyer of item latent defects found by Seller or sub-tier suppliers.
4. Re-submittal of Rejected Items: Any item rejected by Northrop Grumman and subsequently resubmitted to Northrop Grumman **shall** be clearly identified as a resubmitted item, indicating the Procurement Document number and Northrop Grumman's reject document number in Seller's Certificate of Conformance (CoC).
5. Notification of Facility Change: Seller **shall not** use any production, manufacturing, and/or processing facilities that differ from facilities previously approved by Northrop Grumman without first notifying Buyer and affording Northrop Grumman an opportunity to examine and approve such facilities for compliance with procurement quality requirements. Seller **shall not** relocate any production, manufacturing, and/or processing facilities previously approved by Northrop Grumman without first notifying Buyer and affording Northrop Grumman an opportunity to examine and approve such facilities for compliance with procurement quality requirements.



6. Changing of Test Facility: If a specific test facility was previously approved by Buyer as provided for in the Procurement Document, the Seller **shall not** change a test facility or use another test facility to meet specification/drawing requirements without Buyer's prior written approval.
7. Change in Quality Management System (QMS) status: Seller **shall not** make a significant change in QMS certification status without first notifying the Buyer. This includes, but is not limited to, approval of QMS to ISO 9001, AS9100, AS9110, AS9120, or Federal Aviation Administration (FAA) Repair Station requirements; major findings that jeopardize supplier's certification status; loss of certification; or supplier's willful decision to opt out of QMS certification to one of the standards noted above.
8. Change of Management/Owner: Seller **shall** notify Buyer when a significant change in management or ownership has occurred.

#### B. RESPONSIBILITY FOR CONFORMANCE

The supplier **shall**, at minimum, conform to all Procurement Document, flow down, audit, and quality requirements.

1. Neither surveillance, inspection, and/or test made by Northrop Grumman or its representatives or U.S. Government representatives at either Seller's or Northrop Grumman's facility, or Seller's compliance with all applicable procurement quality requirements, **shall** relieve Seller of the responsibility to furnish an item that conforms to the requirements of the Procurement Document.
2. Seller **shall** control sub-tier supplier procurements to the extent necessary to ensure quality requirements specified in the Procurement Document are satisfied.
3. Seller **shall** ensure all applicable provisions of this document are flowed to its subcontractors including copies of the latest revision process specifications.
4. Seller **shall** notify Buyer of any proposed change in design, fabrication method, or process, and obtain approval from Buyer before making the change.
  - a. Articles, which have incorporated approved changes, **shall** be appropriately identified.
5. Seller **shall** notify Buyer of item latent defects found by Seller or sub-tier suppliers.
6. When required, Quality requirements **shall**, at minimum, include the following:
  - a. Sub-tier supplier pre-award survey/evaluations
  - b. Periodic auditing of supplier
  - c. Implementing a sub-tier supplier rating system
  - d. Ensuring adequate review of Procurement Documentation prior to procurements
  - e. Controlling procurement of critical items for Seller's product
  - f. Inspection of procured items to documented procedures

- g. Control of nonconforming material, including corrective action
7. Product nonconformances **shall** be documented in accordance with (IAW) paragraph SQ01-H, Nonconforming Materials.

C. **NORTHROP GRUMMAN** SURVEY, SURVEILLANCE, AUDITS AND INSPECTION

1. **Northrop Grumman** or its representative, as well as its customers and regulatory authorities **shall** have the right of access to conduct surveys, audits, and surveillance of Seller facilities involved in the Procurement Document and applicable records, and those of Seller's sub-tier suppliers with prior coordination with Seller. The surveys and audits will determine capability to comply with, and verify continuing compliance with, the requirements of the Procurement Document and applicable state or federal regulations.
2. **Northrop Grumman** or its representative **shall** have the right to perform an inspection at Seller's facilities and those of Seller's sub-tier supplier with prior coordination with Seller, during the period of manufacturing and inspection prior to shipment.
3. Final inspection and acceptance **shall** be performed at the **Northrop Grumman's** facility, unless otherwise specified in the Procurement Document.

D. FAILURE REPORTING

When an electronic item is returned to a Seller for troubleshooting and/or repair, the Seller **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:

1. Procurement Document number
2. Part number
3. Discrepancy from customer
4. Fault found
5. Actions taken to repair discrepancy
6. Test procedure used to verify fault has been eliminated
7. A Teardown and Failure Analysis Report must be provided at the completion of evaluation and be physically sent along with the unit.
8. Failure Reports **shall** be signed by Seller's duly authorized representative.
9. Certificate of Compliance, or **Form FAA 8130-3, Authorized Release Certificate, Airworthiness Approval Tag**, indicating the electronic assembly was reworked or repaired IAW applicable Original Equipment Manufacturer (OEM) requirement(s).

10. 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.

#### E. SUPPLIER CORRECTIVE ACTION REQUEST

1. When a quality problem exists with Seller's items, Seller **shall** respond to and complete a Supplier Corrective Action Request (SCAR).
2. Responses to SCARs **shall** be timely. Level 2 SCARs and above **shall** include the following information:
  - a. Root cause of the deficiency,
  - b. Action taken to correct the specific deficiency,
  - c. Action taken to determine if other products are affected,
  - d. Effectivity date for implementation of identified corrective actions.
  - e. Verification that the corrective actions are **effective**.

#### F. U.S. GOVERNMENT SOURCE INSPECTION

For procurements made under U.S. Government contracts, the U.S. Government **shall** have the right to inspect any and all of the work contracted through the Procurement Document, at Seller's facilities, or at sub-tier supplier's facilities. Seller quality control or inspection system and manufacturing processes are subject to review, verification, and analysis by authorized U.S. Government representatives.

#### G. MEASURING AND TEST EQUIPMENT

1. When measuring and testing an item, the Seller **shall** be responsible for validating the accuracy and stability of tools, gauges, and test equipment used to demonstrate that an item conforms to the requirements specified in the Procurement Document.
2. Documented schedules **shall** be maintained for periodic calibration of measurement and test equipment to adequate standards.
3. Objective evidence of calibrations **shall** be recorded and made available for Northrop Grumman's review.

#### H. NONCONFORMING MATERIALS

Nonconforming material must be identified and documented, segregated or bonded, pending disposition when found, to prevent its unintended release or use, and evaluated to determine the actions necessary to contain its effect on other processes or products.

1. Seller **shall** provide and maintain a corrective action and disposition program for nonconforming materials.
2. Seller **shall** provide for control, segregation, and identification of nonconforming materials detected at Seller's facilities.

3. Seller **shall not** have MRB disposition authority without Northrop Grumman's written authorization.
4. No Repair **shall** be allowed outside of the specific specification limits unless Seller obtains Northrop Grumman's prior written approval.
5. No Rework **shall** be allowed unless prior written approval is obtained by Seller from Northrop Grumman.

#### I. INSPECTION RECORDS

1. Seller **shall** maintain records of all inspections and tests performed on any item delivered to the **Northrop Grumman's** facility or drop shipped to another location as directed by the Procurement Document.
2. Records **shall** identify any nonconformance and **shall** be made available for **Northrop Grumman's** review.
3. Seller and subcontractors **shall** ensure records are available for review by Customers and Regulatory Authorities IAW contract or regulatory requirements.

#### J. SAMPLE INSPECTION

1. Seller, prior to implementation of a sampling plan, **shall** provide a copy of said plan to the Buyer. **Northrop Grumman** reserves the right to reject any plan that does not conform to the quality requirements of the program.
2. Seller **may** use sample inspection plans, when tests are destructive, or when the records or inherent characteristics of the product indicate that a reduction in inspection/testing is achievable without jeopardizing product quality.
3. Sample inspection **shall** be IAW the applicable **Northrop Grumman** specification. When not specified by **Northrop Grumman**, military standard sampling plans **shall** be used, such as:
  - American National Standards Institute (ANSI) / American Society for Quality (ASQ) Z1.4-11, *Sampling Procedures and Tables for Inspection by Attributes*.
  - **MIL-STD-1916, DOD Preferred Methods for Acceptance of Product**
  - ISO 2859, *Sampling Procedures for Inspection by Attributes*.
4. All sample inspection plans **shall** provide valid confidence in specified quality levels.

#### K. IDENTIFICATION

1. All materials **shall** be identified by a part number and revision, permanently and legibly affixed directly to the surface of each article.
2. In the event this is not possible due to physical size or nature of material, an identification tag **shall** be securely affixed to each article.
3. If articles are supplied in individual or multi-unit containers, the container **shall** reveal the appropriate identification.

Examples of traceable information may include, but are not limited to:

- Date of Manufacture
- Serial Number
- Lot Number
- Control Number
- Heat Lot Number
- Final Inspection Date
- Batch Number
- Casting Number
- Work Order Number

#### L. PACKAGING, PRESERVATION, AND STORAGE

1. Seller **shall** incorporate good commercial practices for preservation and packaging of all articles that apply to this Procurement Document.
2. Seller **shall** identify each package permanently and legibly with Procurement Document number, manufacturer's name, date shipped, and packing sheet number.
3. Packaging **shall** be selected, to the extent necessary, to provide protection from physical and environmental damage during shipping and handling.
  - a. Cushioning materials **shall** be applied, as required, to protect and to restrict movement of items.
4. All volatile, toxic, or fume-emitting materials, which are harmful to human health, **shall** be properly contained IAW applicable health and safety requirements. Seller **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).
  - a. Containers **shall** be clearly marked as to its contents with appropriate warnings, precautions, instructions, and storage conditions.
  - b. Material Safety Data Sheet (MSDS) **shall** be included with each shipment.
5. Dies packaged in a plastic (not ceramic) package that are not on a printed circuit board assembly **shall** comply with JEDEC-STD-033, *Standard for Handling Packaging, Shipping, and Use of Moisture/Reflow Sensitive Surface-Mount Devices*.
6. Product requiring preservative oil **shall** be packaged in military approved packaging, e.g., MIL-DTL-117, Type II, Class C, Style 1, 2; or MIL-DTL-117, Type III, Class C, Style 1.
7. Seller **shall not** mix two or more part numbers within a single package, except that multiple smaller packages within a larger package is permissible if individual packages are clearly labeled.

#### M. STORAGE AND SHELF LIFE

1. Seller **shall** identify materials and articles having definite characteristics of quality degradation or drift with age and/or the environment. Where shelf life is either a specified requirement or is needed to ensure end-of-life performance, the Seller **shall** affix appropriate label identifying the shelf-life expiration date to supplied materials.
  - a. Identification **shall** indicate the date and/or cycle that the critical life was initiated and the date and/or cycle at which the useful life will be expended.
  - b. If environment is a factor in determining useful life, identification **shall** also include the storage temperature, humidity, etc., required to achieve the stated useful life.
2. Seller **shall** provide a copy of the manufacturer's CoC that defines the shelf-life characteristics of any material that fits into this category. Identification **shall** include the following information at a minimum:
  - a. Seller CoC (refer to section N of SQ01)
  - b. Date of manufacturer
  - c. Batch and/or lot numbers
  - d. Date of expiration
  - e. Procurement Document number
  - f. Any special storage conditions for the material

If a material has no identified shelf life, the certificate **shall** note this condition. Seller's certificate should be traceable to the place of procurement or manufacturer. A manufacturer's certificate that is traceable to the material provided is acceptable.

3. Materials or articles with less than **80%** useful life or cycles remaining **shall not** be supplied to **Northrop Grumman**; however, Seller **shall** verify that sufficient operating life and environmental margin remains to meet the specified requirements of the Procurement Document.
4. If **Northrop Grumman** so chooses, it may accept material with less than **80%** of the shelf life remaining due to critical need; Buyer will document this action on the Procurement Document directing the Seller to ship the material.

#### N. SELLER'S BASIC CoC

1. A CoC **shall** be provided with each shipment with the following information at a minimum:
  - a. Both the Seller's and the manufacturer's name and location, if different
  - b. Procurement Document and Line-Item Number, including quantity for each line item

- c. Identifying nomenclature such as **the following**:
    - i. Item Name
    - ii. Part Number
    - iii. Revision
    - iv. Serial Numbers, **and / or**
    - v. **National Stock Number**
  - d. Quantity shipped
  - e. **Country of Origin (if outside of the United States)**
  - f. Conformance Clause: “The items furnished per **Northrop Grumman’s** Procurement Document have been manufactured, tested, and inspected in accordance with the requirements of the applicable specifications/drawings and the results of such tests and inspections meet the requirements thereof.” (or equivalent wording)
  - g. The Seller’s duly authorized representative **shall** sign the CoC. (Electronic or wet signatures are acceptable.)
2. The Seller **shall** provide their standard CoC to certify that the articles delivered under this Procurement Document conform to the applicable requirements of **Northrop Grumman’s** or Manufacturer’s specifications for the article ordered.

**3. The packing list shall reflect the CoC line items and associated quantities.**

**O. CERTIFICATE OF GOVERNMENT APPROVED QUALIFIED PARTS LIST (QPL) ITEMS**

When the items supplied are required to be QPL/Qualified Manufacturers Line (QML) parts, the following **shall** apply:

1. Seller **shall** submit a certification identifying that the manufacturer of the material described herein has been granted qualification by the Defense Supply Agency (DSA) IAW the applicable military specification.
2. The inclusion of products from the QPL **shall not** relieve the manufacturer of their responsibility for providing items, which meet all specification requirements, or for performing the qualification, inspections, and tests specified for such items.

**P. CONTROL OF PROCESSES**

1. Seller **shall** monitor processes to ensure supplier services and/or products meet contractual requirements
2. Seller **shall** take corrective action when process measures indicate that products or services could potentially fall outside of acceptable, contractual limits.

## Q. DISCLOSURES AND NOTIFICATIONS

1. The Seller's system **shall** provide for timely reporting to the Buyer of nonconformities that may affect already delivered product, including suspect/counterfeit parts, materials, and conditions under which product malfunctions, defects, and un-airworthy conditions **must** be reported and dispositioned, or any continuing airworthiness actions.
2. Seller **shall** ensure that their QMS has the capability to report nonconformance(s) on Critical Safety Items (CSI) in full compliance with DFARS 252.246-7003.

## R. CANCELLED OR SUPERSEDED SPECIFICATIONS

1. Cancelled or superseded military specifications that are called out on legacy Northrop Grumman engineering drawings and drawings with Northrop Grumman acquired design cognizance **shall** be certified to the latest or superseding specifications, provided there is a clear linkage via the Department of Defense Index of Specifications and Standards (DODISS) or the Information Handling Services (IHS) website. **If applicable, indicate such linkage on the supplier CoC (refer to section N of SQ01).**

**NOTE:** Suppliers are cautioned to verify the "Cancellation Notice" is still in effect because certain cancelled military specifications have been reinstated in recent years.

- a. Processing **shall** be continued to the cancelled specification when the "Cancellation Notice" does not provide a clear direction for a superseding specification or as directed by the cognizant Manufacturing and Production (M&P) Engineering.

**NOTE:**

Military standards website: <https://quicksearch.dla.mil/qsSearch.aspx>

IHS website: <https://global.ihs.com>

## S. CONTAMINATION/FOREIGN OBJECT DEBRIS (FOD)

1. Supplier **shall** ensure that the work environment needed to achieve conformity of product and service requirements includes the elimination of contamination or foreign objects being introduced during any manufacturing, testing, or packaging activities. This requirement is applicable to the extent of the supplier's business activities.

**NOTE:** Good housekeeping practices should identify and preclude any foreign object or contamination being introduced during processing a shipment to Northrop Grumman or directed customer.



## T. REQUEST FOR CHANGE/INFORMATION (RC/I) & SUPPLIER REQUEST FOR INFORMATION AND CHANGE (SRIC)

**Guidance:** If SQ31 is required, then SQ01-T is not applicable.

**NOTE:** C4 Missile Defense (C4MD), Mission Readiness and Protective Services (MRPS) business units and Huntsville Manufacturing Center (HMC) operations within the Global Battle Management and Readiness (GBMR) Division must use SQ31.

1. Seller **shall** utilize the RC/I process **or SRIC process** to request clarification or change of a drawing / specification requirement.
2. Access to this form **shall** be requested by Seller.

**NOTE:** The **RC/I Form P0-F030** and the Help Desk contact list are available on the On-line Automated Supplier Information System (OASIS) at <https://www2.northropgrumman.com/suppliers/Pages/Forms.aspx>. If a supplier has any changes to drawings, specifications noted on the drawing, processing, materials, or contractual requirements of the Procurement Document, the supplier can initiate an RC/I, Form P0-F030, to request assistance. RC/Is that are considered producibility enhancements require the supplier to submit a business case presented upon RC/I issuance. The business case provides justification on how the enhancement will improve quality, cost, and/or schedule. Product nonconformances are not to be documented on and will not be processed using the RC/I form.

## U. SUPPLIER SUB-TIER CONTROL

1. Supplier shall ensure the following:
  - a. All items procured from its subcontractors/suppliers conform to all requirements of the Procurement Document.
  - b. All provisions of this document that have been incorporated into the Procurement Document are flowed to its subcontractors/suppliers, including copies of the latest revision process specifications.
  - c. For Special Processes Procurement Documents, "Northrop Grumman Defense Systems" is cited as the customer. The Program name/ID and latest process specification revisions are included in the Procurement Document.

## SQ02 Northrop Grumman Inspection/Surveillance

**Guidance:** Select each section that is required A, B, C, D, E, F, G, or H.

### A. SOURCE INSPECTION

1. Northrop Grumman or its Quality representative **shall** perform source inspection at Seller's facilities or where designated in the Procurement Document prior to shipment.
2. Inspection and test of the articles defined in this contract **shall** be performed by Seller and **shall** be subject to witnessing by Northrop Grumman or its Quality representative.
3. Seller **shall** provide reasonable inspection facilities for Northrop Grumman or its Quality representative to verify conformance to requirements.
4. Seller **shall** provide inspection/test data and reports to Northrop Grumman's Source Inspector indicating which characteristics, parameters, dimensions, etc., were actually tested/inspected for validation to Northrop Grumman's specification/drawing requirements.
5. After Northrop Grumman'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.
6. For any nonscheduled entry, rework, or test, Seller **shall** request Northrop Grumman or its Quality representative to repeat source inspection.
7. Buyer **shall** be notified at a minimum of seven (7) workdays prior to commencement of these activities to allow for arrangements for Northrop Grumman's representative to be present during inspection and test.

**NOTE:** If a Northrop Grumman non-US Government customer source inspection is required, the Northrop Grumman Customer Representative(s) may accompany the Northrop Grumman Representative(s) when the source inspection is scheduled. During the scheduling of the source inspection, a Northrop Grumman Representative will notify the supplier that the Northrop Grumman customer may be accompanying them during the scheduled source inspection.

### B. NORTHROP GRUMMAN IN-PROCESS INSPECTION

1. Northrop Grumman or its Quality representative **shall** perform in-process inspection at Seller's facilities.
2. Seller **shall** submit to Buyer, an inspection plan or traveler designating in-process source inspection points.
3. Buyer **shall** designate required in-process source inspection points and inform Seller in writing.

4. Seller **shall** provide reasonable inspection facilities for **Northrop Grumman or its Quality** representative to verify conformance to requirements.
5. After **Northrop Grumman'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.
6. For any nonscheduled entry, rework, or test, Seller **shall** request **Northrop Grumman or its Quality representative** to repeat source inspection.
7. Seller **shall** notify Buyer at a minimum of 48 hours prior to the time in-process inspection coverage is required.

C. **NORTHROP GRUMMAN PRE-CAP INSPECTION**

Items in the Procurement Document **shall** require pre-cap inspection by **Northrop Grumman's Quality representative** subsequent to the 100 percent pre-cap visual inspection performed by Seller.

D. **NORTHROP GRUMMAN SCANNING ELECTRON MICROSCOPE ANALYSIS**

1. **Northrop Grumman's** approval of Scanning Electron Microscope (SEM) analysis **shall** be required for wafer lots to be incorporated in parts supplied to **Northrop Grumman's Quality representative**.
2. SEM analysis **shall** be performed by Seller and **shall** be approved by Buyer prior to the incorporation of wafers in parts.

E. **NORTHROP GRUMMAN SOURCE SURVEILLANCE**

1. **Northrop Grumman's Quality representative shall** perform surveillance at Seller's facilities during the contract period.
2. Surveillance **shall** be scheduled by Buyer and coordinated with Seller prior to implementation.
3. Surveillance activities **shall** include all functional areas necessary for **Northrop Grumman's Quality** representative to verify the quality of the procured product.

F. **NORTHROP GRUMMAN SOFTWARE AUDITS**

**Northrop Grumman or its Quality** representative **shall** perform audits, reviews, and/or verifications at Seller's facilities during the development and test of software to be furnished for this procurement.

G. **ELECTRONIC SOURCE INSPECTION**

1. Seller **shall** provide electronic source inspection.
2. Electronic source inspection **shall** consist of photos sent to Buyer via electronic media. Test data **shall** also be sent electronically when SQ07 is required on the Procurement Document.

3. Northrop Grumman **shall** review, and Buyer **shall** provide authorization to ship predicated on the results of the photos and test data when test data is required with SQ07 on the Procurement Document.

## H VERIFICATION OF PURCHASED PRODUCT

1. Verification activities performed by Northrop Grumman or Northrop Grumman's customer at any level in the Seller's supply chain **shall not** be used by the Seller as evidence of effective control of quality and does not absolve the organization of its responsibility to provide acceptable product and comply with all requirements.

**NOTE:** Verification activities can include:

- a. Obtaining objective evidence of the conformity of the product from the Seller (e.g., accompanying documentation, CoC, test records, statistical records, process control records)
  - b. Inspection of the required documentation
  - c. Inspection of products upon receipt
  - d. Delegation of verification to the supplier or supplier certification
2. Where purchased product is released for production use pending completion of all required verification activities, it **shall** be identified and recorded by the Seller to allow recall and replacement if it is subsequently found that the product does not meet requirements.
  3. If the Buyer delegates verification activities to the supplier, the requirements for delegation **shall** be defined by the Buyer, and a register of delegated **shall** be maintained by the Seller.

## SQ03 Reserved

## SQ04 U.S. Government Source Inspection (DoD)

**Guidance:** A, B, C, D, and E all apply when SQ04 is required. F is required only when specified.

- A. U.S. Government source inspection **shall** be required prior to shipment from Seller's facility. **If SQ02 has been levied, the Northrop Grumman Source Inspection shall be held before the U.S. Government Source Inspection.**
- B. Upon receipt of this Procurement Document, Seller **shall** immediately notify and provide a copy of the Procurement Document to the U.S. Government representative, who normally services Seller's facility, so appropriate planning for U.S. Government source inspection can be accomplished.

- C. If a U.S. Government representative does not normally service Seller's facility, the nearest Army, Navy, Air Force, or Defense Agency Inspection Office **shall** be contacted.
- D. In the event a U.S. Government representative cannot be contacted, Buyer **shall** be notified immediately.
- E. Seller, without additional charge to the Procurement Document, **shall** provide all reasonably required facilities and assistance for the convenience and safety of the U.S. Government representative(s) in the performance of their duties.
- F. If a customer source inspection is required, the Northrop Grumman customer representative(s) may accompany the Northrop Grumman representative(s) when the source inspection is scheduled. During the scheduling of the source inspection, a Northrop Grumman representative will notify the supplier that the Northrop Grumman customer may be accompanying them during the scheduled source inspection.

## SQ05 Raw Material Documentation Requirements

**Guidance:** Select each section that is required (A, B, C, and/or D) when SQ05 is required.

- A. Shipment of materials, whether raw, semi-finished, or finished, **shall** be accompanied by a CoC from Seller, stating at a minimum:
  1. Seller CoC (refer to section N of SQ01)
  2. Material identification by specification number, **revision, amendment, type, grade, etc. and** material conditions, as specified in the purchase order.
  3. The raw material manufacturers or mill's lot or batch number.
  4. A statement of raw material conformance to applicable requirements.
  5. The name and location of the raw material manufacturer or mill.
  6. **Purchase order number**
  7. **Quantities listed by associated line item**
- B. All items defined in SQ05-A with the addition of actual chemical/physical test results **or other test results required per applicable specification** that substantiate compliance with the applicable raw material and/or specification requirements **shall** be provided.
- C. The Seller **shall** maintain and provide evidence of material authenticity (chain of custody) from the lowest level component to configured end item(s). The Certification **shall** clearly identify the name and location of all of the supply chain intermediaries from the original manufacturer to the final source of the product delivered to Northrop Grumman.
- D. **Physical marking shall include manufacturer's lot number indicated on certification.**

## SQ06 Control of Special Processes

**Guidance:** A, B, and C apply when SQ06 is required. D is required only when specified.

- A. Buyer **shall** approve special processes performed by Seller, or any of its sub-tier suppliers, including the system/procedures used to control special processes. **Special processes** requiring Buyer approval include, **but are not limited to:**
1. Welding, destructive physical analysis, brazing, **eddy current inspection, hydrostatic testing**, dye penetrant inspection, painting, radiographic inspection, plating, heat treating of metals, casting, chemical surface treatments, forging, contamination control, bonding, magnetic particle inspections, conformal coat, composites, soldering, pressure test, and ultrasonic inspection.
  2. Any other processes defined in the Procurement Document.
- B. Buyer approval of special processes **shall not** relieve Seller of responsibility for exercising the control measures necessary to ensure delivered items conform to the requirements of the Procurement Document.
- C. Sub-contract and Contract manufacturers **shall** have the responsibility of approving, auditing, and maintaining their sub-tier suppliers for special processes. Northrop Grumman reserves the right to review any records pertaining to special processes and will be made available for review upon request.
- D. Where chemical agent resistant coating (CARC) paint is specified, at a minimum the following **shall** be submitted with every processed lot:
1. A detailed information sheet identifying the CARC application procedures utilized.
  2. CoC for the CARC process (refer to section N of SQ01) and certifications for all sub-processes including but not limited to; Shot Peen, Abrasive-Grit Blast, Chemical Coating, Plating, Anodize, Etch, etc.
  3. Material certifications for paint and primers, including specific color.

**NOTE:** The basis for the special process supplier approval is by a Northrop Grumman special process audit or nationally recognized third-party audit and certification by organizations with expertise in the specific special process of interest (e.g., NADCAP, A2LA). Third-party Quality Management System (QMS) certification (e.g., ISO 9001/AS9100) alone does not satisfy the requirement for a third-party special process audit.

## SQ07 Inspection / Test Data

**Guidance:** A and B apply when SQ07 is required.

- A. When **Northrop Grumman**'s specifications or Procurement Document require test data to be recorded during the performance of acceptance testing, a paper, or

- preferably, an electronic copy (i.e. e-mail or Managed File Transfer (MFT)) of the recorded data, showing evidence of Seller's inspection and verification of performance, **shall** accompany each shipment.
- B. Data **shall** meet the requirements of **Northrop Grumman**'s specifications or Procurement Document and, at a minimum, be identified with:
1. Name and address of supplier
  2. **Northrop Grumman**'s Procurement Document number and change notice number
  3. Part number
  4. Lot numbers, serial numbers, or date codes of items tested
  5. Drawing/specification and revision used
  6. Type of test performed
  7. Identification number of test equipment used
  8. Total quantity of order, quantity of items tested, quantity of items accepted, and quantity of items rejected
  9. Any codes, keys, or other information necessary to interpret Seller data
  10. Any acceptance inspection equipment required by contract

## SQ08 Radiographic / Computer Tomography Inspection

**Guidance:** A, B, C, D, and E apply when SQ08 is required. Exclusion of B and/or C is acceptable based on inspection method. F is required only when specified.

- A. Seller **shall** be approved by Buyer to perform the radiographic/computer tomography inspection applicable to this Procurement Document or **shall** use a facility approved by Buyer.
- B. Unless otherwise specified by the parts specification, each radiograph **shall** comply with American Society for Testing and Materials (ASTM) E1742 *Radiographic Examination*, MIL-STD-883 *Test Method Standard – Microcircuits*, and MIL-STD-750 *Test Method for Semiconductor Devices*.
- C. Unless otherwise specified by the parts specification, computer tomography **shall** comply with ASTM E1441 *Standard Guide for Computer Tomography Imaging*.
- D. The radiographic film / image and a copy of the report **shall** accompany the shipment of the items to **Northrop Grumman**.
- E. Serial number location and X-ray position **shall** be recorded as part of, or attached to, the report.
- F. Prior to fabrication on any deliverable item, the supplier **shall** provide and receive approval for, the planned manufacturing, testing, and inspection procedures for non-destructive testing (NDT).

## SQ09 Requirements for Distributors

**Guidance:** A, B, and C apply when SQ09 is required. D is required only when specified.

- A. The Distributor (a Seller other than the Manufacturer) **shall** certify that the articles delivered under this Procurement Document conform to the applicable requirements of **Northrop Grumman's** or Manufacturer's specifications for the article ordered.
- B. The Distributor CoC **shall** include the following information:
1. Seller CoC (refer to section N of SQ01)
  2. The origin of manufacture
  3. **Purchase Order number**
  4. Part number **and revision (if applicable)**
  5. Applicable traceability information (**date lot code, batch code, lot code, serial number(s), etc.**).
  6. Results of testing or special inspection, as required
  7. Dated signature of authorized Seller Representative
  8. Items identified by **purchase order** number **shall** have complete information as to the original manufacturer and original manufacturer's part number
- C. The Distributor **shall** maintain and provide evidence of material authenticity (chain of custody) back to an approved source of supply: the Original Component Manufacturer (OCM) / **Original Equipment Manufacturer (OEM)** / Authorized Aftermarket Manufacturer (AAM) / Franchised [Authorized] Distributor. The Certification **shall** clearly identify the name and location of all of the supply chain intermediaries from the approved source of supply to the final source of the product delivered to Northrop Grumman.
- D. The distributor **shall** include a copy of the original manufacturer's CoC.

## SQ10 Seller Inspection Reporting Requirements

**Guidance:** A, B, C, and D apply when SQ10 is required.

- A. Seller **shall** submit, with each shipment of items, one copy of an inspection report reflecting 100 percent inspection verification of all drawing characteristics, including notes, for all products.
- B. The report **shall** delineate each drawing characteristic and specify the corresponding actual measurement results.
- C. Inspection record traceability **shall** be maintained by either serializing each item, if allowed, or tag identification. The item identification is then matched with the corresponding inspection report.



- D. The only exception to the above procedure applies to items machined under tape-controlled or automatic conditions. In that case, the 100 percent inspection report **shall** be limited to the first and last item procured from one continuous set-up.
1. The inspection report **shall** state that the items were machined under tape-controlled or automatic conditions.

## SQ11 Calibration System Requirements

**Guidance:** A, and B, apply when SQ11 is required. C is required only when specified.

- A. Seller **shall** be responsible for the calibration, accuracy, validation, and maintenance of any equipment, tooling, or gauges utilized by Seller to produce, inspect, or test articles to be delivered under this Procurement Document.
- B. Seller's equipment calibration system **shall** be IAW one of the requirements listed **here**:
1. ANSI/NCSL Z540-1, *Calibration Laboratories and Measuring and Test Equipment*, or
  2. ISO 10012-1, *Measurement management systems — Requirements for measurement processes and measuring equipment*, or
  3. ISO 17025, *General requirements for the competence of testing and calibration laboratories*
- C. A supplier that manufactures and/or calibrates specialized inspection equipment and is not accredited to one of the calibration standards in paragraph B may, upon approval by the Buyer, calibrate such equipment if:
1. The standards used are National Institute of Standards and Technology (NIST) traceable,
  2. The calibration process is defined and standardized, and
  3. The resulting certifications or reports are essentially comparable to one of the above standards.

The supplier's calibration system **shall** be subject to review and approval by Northrop Grumman Quality Assurance at all times during the performance of the PO.

## SQ12 Control of Software

**Guidance:** Select any combination of A, B, and C that apply. A Software Quality Assurance Program **shall** be selected when using A: SQ12-A.1.a, SQ12-A.1.b, SQ12-A.1.c, or SQ12-A.1.d.

### A. SOFTWARE QUALITY PROGRAM

1. Seller **shall** establish a Software Quality Assurance Program that conforms to the standards specified below, and is subject to **Northrop Grumman** review and approval:
  - a. AS9006, *Deliverable Aerospace Software Supplement for AS9100, Quality Management Systems – Aerospace – Requirements for Software*, or AS9115, *Quality Management Systems – Requirements for Aviation, Space and Defense Organizations – Deliverable Software*,
  - b. ISO/IEC 12207, *Software Life Cycle Processes*,
  - c. Capability Maturity Model Integration (CMMI) - Level 3 or higher, or
  - d. FAA DO-178 – *Software Considerations in Airborne Systems and Equipment Certification*

### B. SOFTWARE DELIVERY DOCUMENTATION

1. Seller **shall** deliver software documentation as specified in the Procurement Document.
2. Software documentation **shall** be sufficient to ensure:
  - a. All requirements are achieved, or waivers are submitted
  - b. Configuration is correct, and deliverables are properly identified and marked
  - c. Planned level of acceptance is achieved and/or approved deviation/waivers are made part of the deliverable documentation package
  - d. Operating instructions accompanying the developed software are sufficient to enable loading, initialization, and operation by Seller's personnel

### C. CONTROL OF SOFTWARE

1. Seller **shall** provide and maintain a system for the control of software used in the fabrication and qualification/acceptance testing of deliverable hardware, software, and firmware to be furnished for this procurement.
2. Seller **shall** maintain procedures and test records for items delivered to **Northrop Grumman** and these records **shall** be available for Northrop Grumman review.

## SQ13 Electrostatic Discharge Control

**Guidance:** A, B, C, and D apply when SQ13 is required. E, F, and G is required only when specified.

- A. Seller **shall** provide and maintain a program for Electrostatic Discharge (ESD) control for hardware items to be furnished for this procurement IAW one or more of the following standards:
1. ANSI/ESD S20.20 Parts, *ESD Association Standard for the Development of an Electrostatic Discharge Control Program for – Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)*,
  2. Electronic Industries Alliance (EIA) 625, *Requirements for Handling Electrostatic Discharge Sensitive Devices*
  3. MSFC-STD-1800, *Electrostatic Discharge (ESD) Control for Propellant and Explosive Devices*
  4. DoD 4185.26-M, *DoD Contractors Safety Manual for Ammunition and Explosives*
  5. JEDEC-STD-033, *Standard for Handling, Packing, Shipping, and Use of Moisture/Reflow Sensitive Surface-Mount Devices*
- B. Seller's ESD control program **shall** be subject to Northrop Grumman review and Buyer approval.
- C. Items **shall** be packaged with ESD protective material.
1. ESD protective caps **shall** be used on equipment external connectors or contacts that connect to ESD parts and assemblies within the equipment.
  2. All packages **shall** be identified with a suitable precautionary label.
  3. The label **shall not** be utilized as a sealing device.
- D. Any ESD components or assemblies received by Northrop Grumman that are not in an ESD protective material **shall** be subject to return to Seller. **NOTE:** ESD requirements are defined as applicable to any active or passive components.
- E. Reference MIL-STD-129, *Military Marking for Shipment and Storage*, Figure 37. For ESD Class 1 and 2 components all leads must be shorted by material having a surface resistivity between 1E5 and 1E12 ohms per square. Packing should provide the necessary protection during shipping.
- F. Northrop Grumman has determined that "Pink Poly" (polyethylene antistatic) bags or material is an unacceptable packaging medium and **shall not** be used.
- G. Surface mount devices **shall** be handled and packed in accordance with IPC/JEDEC J-STD-033, *Standard for Handling, Packing, Shipping, and Use of Moisture/Reflow Sensitive Surface Mount Devices*.

## SQ14 Interchangeability/Replaceability

**Guidance:** Select A or B when SQ14 is required.

- A. **Interchangeability:** As noted in MIL-I-8500, *Interchangeability and Replaceability of Component Parts for Aerospace Vehicles*, “Interchangeability” applies to “interchangeable items” that are manufactured with the aid of controlled media and require only the application of attaching means for their installation. Interchangeable items **shall** be capable of being readily installed, removed, or replaced without alteration, misalignment, or damage to items being installed or to adjoining items or structure.
- B. **Replaceability:** As noted in MIL-I-8500, “Replaceability” applies to “replaceable items” that are manufactured with the aid of controlled media, and the installation of which requires alterations of the items in addition to the normal application and methods of attachment. Such alterations may include drilling, reaming, cutting, filing, trimming, bending, shaping, etc.

## SQ15 Reserved

## SQ16 Reserved

## SQ17 Prohibited Material (Electrical, Electronic, & Electromechanical Parts)

**Guidance:** Buyer will specify A and/or B. C always applies when SQ17 is required.

- A. All constructions and finishes containing pure cadmium or pure zinc **shall** be prohibited.
- B. Constructions and finishes containing pure tin **shall** be prohibited unless they contain a minimum of 3 weight percent alloying element(s); i.e., lead, silver, etc.
- C. Seller **shall** submit a certificate with each shipment stating that no prohibited materials are present in their deliverable product.

## SQ18 DFARS 252.225-7016 Restriction on Acquisition of Ball and Roller Bearings

**Guidance:** A and B apply when SQ18 is required.

- A. Each ball and roller bearing delivered under this contract **shall** be manufactured in the United States, its outlying areas, or Canada; and
- B. For each ball or roller bearing, the cost of the bearing components manufactured in the United States, its outlying areas, or Canada **shall** exceed 50 percent of the total cost of the bearing components of that ball or roller bearing.

## SQ19 Quality Management System (QMS)

**Guidance:** Select A or B; C or D; or E, F, G, H, I, J, K, L, M or N; O or P; Q or R; S or T

- A. ISO 9001, *Quality Management Systems — Requirements*, Compliant
  - 1. Seller **shall** provide and maintain a QMS that is compliant to ISO 9001.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman** or **its** representative.
- B. ISO 9001, *Quality Management Systems — Requirements*, Registered
  - 1. Seller **shall** provide and maintain a QMS registered to ISO 9001.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having an ISO Certification from an accredited registrar.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
- C. AS9100, *Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations*, Compliant
  - 1. Seller **shall** provide and maintain a QMS that is compliant to AS9100.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman** or **its** representative.
- D. AS9100, *Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations*, Registered
  - 1. Seller **shall** provide and maintain a QMS registered to AS9100.

2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having an AS9100 Certification from an accredited registrar.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
- E. Capability Maturity Model Integration (CMMI-DEV) - Level 3
1. Seller **shall** provide and maintain a QMS that meets the requirements of CMMI Level 3.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having Software Engineering Institute (SEI) CMMI 3 rating from an accredited appraiser.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
- F. Capability Maturity Model Integration (CMMI-DEV) - Level 4
1. Seller **shall** provide and maintain a QMS that meets the requirements of CMMI Level 4.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having SEI CMMI 4 rating from an accredited appraiser.
  3. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
- G. Capability Maturity Model Integration (CMMI-DEV) - Level 5
1. Seller **shall** provide and maintain a QMS that meets the requirements of CMMI Level 5.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having SEI CMMI 5 rating from an accredited appraiser.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
- H. FAA Federal Aviation Regulation (FAR) Part 145 Repair Station
1. Seller **shall** provide and maintain a QMS that is compliant to FAR Pt. 145 requirements approved by the regional Flight Standards District Office (FSDO) or higher-level FAA office.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman** or **its** representative.
  3. Seller **shall** maintain a type rating on the FAA FAR Pt. 145 certificate applicable to the airframe and/or commodity affected by the Procurement Document.

- I. Quality Management System
  - 1. Seller **shall** have a formalized QMS.
  - 2. **Northrop Grumman shall** have the right to conduct surveys, audits, and surveillance of the Seller's capability to perform satisfactorily to these requirements.
  
- J. Capability Maturity Model Integration (CMMI-SV) for Services - Level 3
  - 1. Seller **shall** provide and maintain a QMS that meets the requirements of CMMI for Services Level 3.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having SEI CMMI for Services 3 rating from an accredited appraiser.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
  
- K. Capability Maturity Model Integration (CMMI-SV) for Services - Level 4
  - 1. Seller **shall** provide and maintain a QMS that meets the requirements of CMMI for Services Level 4.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having SEI CMMI for Services 4 rating from an accredited appraiser.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
  
- L. Capability Maturity Model Integration (CMMI-SV) for Services - Level 5
  - 1. Seller **shall** provide and maintain a QMS that meets the requirements of CMMI for Services Level 5.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having SEI CMMI for Services 5 rating from an accredited appraiser.
    - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's QMS.
  
- M. AS9110, *Quality Management Systems – Requirements for Aviation Maintenance Organizations*, Compliant
  - 1. Seller **shall** provide and maintain a QMS that is compliant to AS9110.
  - 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman** or **its** representative.

- N. AS9110, *Quality Management Systems – Requirements for Aviation Maintenance Organizations*, Registered
1. Seller **shall** provide and maintain a QMS registered to AS9110.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having an AS9110 Certification from an accredited registrar.
    - a. **Northrop Grumman** **shall** reserve the right to conduct an assessment of Seller's QMS.
- O. AS9120, *Quality Management Systems - Aerospace Requirements for Stockist Distributors*, Compliant
1. Seller **shall** provide and maintain a QMS that is compliant to AS9120.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman** or **its** representative.
- P. AS9120, *Quality Management Systems - Aerospace Requirements for Stockist Distributors*, Registered
1. Seller **shall** provide and maintain a QMS registered to AS9120.
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having an AS9120 Certification from an accredited registrar.
    - a. **Northrop Grumman** **shall** reserve the right to conduct an assessment of Seller's QMS.
- Q. ISO 20000, *Service Management System Requirements*, Compliant
1. Seller **shall** provide and maintain an **Information Technology (IT)** Service Management System that is compliant to ISO 20000
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman** or **its representative**.
- R. ISO 20000, *Service Management System Requirements*, Registered
1. Seller **shall** provide and maintain an IT Service Management System registered to ISO 20000
  2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having an ISO 20000 Certification from an accredited registrar.
    - a. **Northrop Grumman** **shall** reserve the right to conduct an assessment of Seller's IT Service Management System
- S. Information Technology Infrastructure Library (ITIL) Compliant
1. Seller **shall** provide and maintain an IT Service Management System that is compliant to ITIL.



2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having a successful audit performed by **Northrop Grumman or its representative**.

T. ITIL Certified

1. Seller **shall** provide and maintain an IT Service Management System certified to ITIL
2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having an ITIL Certification of appropriate personnel from an accredited registrar.
  - a. **Northrop Grumman shall** reserve the right to conduct an assessment of Seller's IT Service Management System

### SQ20 First Article Inspection (FAI)

**Guidance:** Northrop Grumman has standardized First Article Inspections (FAIs) utilizing the Net-Inspect tool for FAI Reports (FAIRs). J applies when SQ20 is required. For a 24-month cycle of FAI, select A, B, C, D, and E. For a 12-month cycle of FAI, select F, B, C, D, and E. G, H, or I is required only when specified.

- A. Inspection and acceptance by **Northrop Grumman** 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.
  1. Where product does not meet the intent of "first production run", as defined within AS9102, 100% of all product characteristics **shall** be inspected.
- B. Seller **shall** submit a First Article Inspection Report on an AS9102 First Article Form, or equivalent, to **Northrop Grumman** demonstrating compliance with the requirements in the Procurement Document and referenced documents (refer to AS9102 and **American Society of Mechanical Engineers (ASME) Y14.41, *Digital Product Definition Data Practices***, for guidance).
  1. The report **shall** reflect 100 percent inspection verification of all drawing characteristics.
  2. The report **shall** delineate each drawing characteristic and specify the corresponding actual measurement results.
  3. The report **shall** provide evidence of acceptance by the Seller's authorized Quality Assurance representative.
    - a. **No shipping prior to approval is permitted.**
    - b. **The Seller will provide the FAI documentation to the Buyer before the planned shipment date.**

- C. Seller **shall** notify the Buyer of the opportunity to witness the performance of FAI/Testing. **If Northrop Grumman decides to waive this right, the supplier shall, upon request, forward the first article(s) along with inspection results (by variables data) and any additional substantiating documentation to Northrop Grumman. Shipment of production articles will not be received by Northrop Grumman pending the acceptance of the first article. Any production effort prior to Northrop Grumman authorization will be at supplier's risk.**
- D. The FAI requirement, once invoked, **shall** continue to apply even after initial compliance. Any or all of the following events requires re-accomplishment of a full, or a delta/partial FAI for affected characteristics:
1. A change in manufacturing source(s), processes, assembly line, inspection method(s), location, tooling, or materials.
  2. A change in numerical control program or translation to another media.
  3. A natural or man-made occurrence which may adversely affect the manufacturing process.
  4. When required as part of corrective action for a part number with repetitive rejection history.
  5. A change in the design affecting form, fit, or function of the part.
  - 6. If there has been a change in source of supply for material or special processes.**
- E. If the First Article ships at the same time as other pieces of the same part number, then the piece used for First Article **shall** be identified.
- F. Inspection and acceptance by **Northrop Grumman** of the First Article **shall** be required:
1. Prior to the start of fabrication of a new product or supplier.
  2. If it has been 12 months or more since the last FAI.
  3. If it has been 12 months or more since the product was last produced.
  4. If there has been a change to form, fit, or function of the product.
  5. Where product does not meet the intent of “first production run”, as defined within AS9102, 100% of all product characteristics **shall** be inspected.
  - 6. If there has been a change in the source of supply for material or special processes.**
- G. Supplier **shall** reference Q1-4-24-DSF, *Defense Systems Supplier Requirements for First Article Inspections*, for FAI guidance. This document may be found on the OASIS website:

<https://www.northropgrumman.com/suppliers/contracts/quality-documents>

- H. An AS9102 package for FAI **shall** be shipped with the first item, unless instructed to provide the AS9102 package for review and approval by Northrop Grumman prior to shipment of the First Article. If the supplier builds the complete lot at the same time, they do so at their own risk, given that the FAI part may be found nonconforming by Northrop Grumman, Defense Contract Management Agency (DCMA), or Government Quality Inspection
- I. An AS9102 package for FAIR **shall** be submitted for review and approval by Northrop Grumman prior to shipment of hardware. If the supplier builds the complete lot at the same time, they do so at their own risk, given that the FAI part may be found nonconforming by Northrop Grumman, Defense Contract Management Agency, or Government Quality Inspection.
- J. Net Inspect
1. Suppliers **shall** use Net-Inspect to document Northrop Grumman FAIRs. FAI forms 1, 2, and 3, **shall** be fully populated per AS9102, *Aerospace First Article Inspection Requirement*, including upload of all supporting documentation.
  2. Suppliers **shall** be onboarded and trained to use Net-Inspect for Northrop Grumman FAIRs.
  3. Training is accessible when logged into Net-Inspect by selecting the knowledgebase articles.
  4. Access the Net-Inspect FAIR repository by using the following link: [www.Net-Inspect.com](http://www.Net-Inspect.com). **NOTE:** There is no cost for Northrop Grumman suppliers to use the Net-Inspect tool to support Northrop Grumman FAIRs.
  5. When suppliers are required to have a Northrop Grumman source inspection, the supplier **shall** not ship hardware (e.g. parts, materials, assemblies) associated with the FAIR to Northrop Grumman until Northrop Grumman has approved the FAIR in Net-Inspect and Buyer (or Buyer representative) has authorized shipment.
  6. For additional information, contact the Buyer or Northrop Grumman Supplier Quality representative.

**SQ21 Reserved**

## SQ22 Contamination / Foreign Object Debris (FOD) & Tool Control

**Guidance:** A, B, C, D, and E apply when SQ22 is required.

**NOTE:** Tool control applies when it is possible for a tool to be left in the final product.

- A. Seller **shall** maintain an FOD prevention program, including tool control.
- B. Seller's FOD prevention program **shall** include the review of design and manufacturing processes to identify and eliminate foreign object entrapment areas and paths through which foreign objects can migrate.
- C. Seller's Tool Control program **shall** include identification, inventory, and location control to reduce the risk of lost tools.
- D. **Northrop Grumman shall** have the right to perform inspections, verifications, tool control, and FOD prevention program audits at Seller's facility to ensure program documentation and effectiveness.
- E. Articles ordered under this Procurement Document **shall** be protected by Seller from contamination or damage from foreign objects or tool control during processing, testing, inspection, handling, and packaging prior to delivery to Seller.

## SQ23 Unique Identification (UID) (DFARS 252.211-7003)

**Guidance:** A and B apply when SQ23 is required. C and D are required only when they are specified.

- A. DFARS clause 252.211-7003, Item Identification and Valuation, **shall** be applied to this Procurement Document.
- B. UID **shall** be in compliance with MIL-STD-130 (current version at time of Procurement Document receipt).
- C. Certification of individual Matrix verification **shall** be supplied by the UID processor to attest that electro-optical scanning and legibility of the UID is consistent with recording standards of UID marking and identification systems.
- D. Certification of Registration for individual and/or itemized UID nameplates and identification plates **shall** accompany shipment, which affirms accountability and traceability into the U.S. Government web database found at this website – [WebFLIS: Web Federal Logistics Information System \(dla.mil\)](http://WebFLIS: Web Federal Logistics Information System (dla.mil)).

## SQ24 Solder Workmanship Standard

**Guidance:** A applies when SQ24 is required.

- A. Soldering and processing of electronic assemblies **shall** be in accordance or equivalent with IPC-A-610 *Acceptability of Electronic Assemblies* or J-STD-001

*Requirements for Soldered Electrical and Electronic Assemblies*. Class of workmanship **shall** be **Class 3 unless otherwise** stated on the specification or drawing.

## SQ25 Solderability

**Guidance:** A, B, and C apply when SQ25 is required.

- A. Material submitted with each shipment **shall** have solderability testing performed IAW one or more of the following specifications:
1. MIL-STD-750, *Test Method for Semiconductor Devices*, Method 2026
  2. MIL-STD-883, *Test Method Standard – Microcircuits*, Method 2003
  3. MIL-STD-202, *Test Method Standard – Electronic and Electrical Component Parts*, Method 208
  4. MIL-P-55110, *Printed Wiring Board, Rigid General Specification for*
  5. MIL-P-50884, *Printed Wiring Board, Flexible or Rigid-Flex, General Specification for*
  6. J-STD-001, *Requirements for Soldered Electrical and Electronic Assemblies*
  7. J-STD-002, *Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires*
  8. J-STD-003, *Solderability Tests for Printed Boards*
- B. Seller **shall** supply a copy of the certification by an accredited agency to one or more of the specifications listed in article “A” with each order.
- C. If, during the life of that Procurement Document, the certification is revoked or the certification expires, all efforts against this Procurement Document **shall** be stopped.
1. Buyer **shall** be notified in writing within 24 hours.

## SQ26 Material Outgoing to Seller (Customer Furnished Property)

**Guidance:** A, B, C, and D apply when SQ26 is required. E is required only when specified.

- A. Materials furnished to Seller, by **Northrop Grumman**, **shall** require accountability by Seller.
- B. Materials **shall** be stored and handled in such a manner to ensure the integrity of the material is maintained.
- C. Seller **shall** obtain direction from Buyer concerning the disposition of rejected and/or unused quantities, or usable trimming remaining at the end of the procurement activity.

- D. Seller **shall** be responsible for maintaining records of identity and the assurance of continued suitability of the tooling, test equipment, etc., while such materials are in their possession.
1. Return of the equipment **shall** be arranged through Buyer.
  2. The property is not to be used for products not identified on this procurement without the written consent of Northrop Grumman.
  3. Supplier **shall not** remove any markings or tags from the property without the written consent of Northrop Grumman.
- E. Material (product) used on this purchase is being supplied to you by Northrop Grumman. It is being supplied directly to you from a Northrop Grumman facility or a supplier that has been authorized by Northrop Grumman to ship this product to you. Northrop Grumman-furnished material will be handled and controlled to ensure its proper use in conformance to all requirements. The supplier will not in any way be relieved of the responsibility for compliance to traceability, identification, shelf life, and certification requirements. If the supplied material is damaged, discrepant, expired, or will not fit the manufacturing tooling, the material **shall not** be used, reworked, or repaired without approval of Northrop Grumman.

### SQ27 Cable Workmanship Standard

**Guidance:** A applies when SQ27 is required.

- A. Workmanship **shall** be IAW IPC/WHMA-A-620 *Requirements and Acceptance for Cable and Wire Harness Assemblies*.

### SQ28 Printed Wiring Board

**Guidance:** A and B apply when SQ28 is required.

- A. Printed Wiring Boards fabricated under this Procurement Document **shall** comply with the requirements of:
1. IPC-A-600, *Acceptability of Printed Boards*,
  2. IPC-6011, *Generic Performance of Printed Boards*, and
  3. IPC-6012, *Qualification and Performance Specification for Rigid Printed Boards*.
- B. Coupons **shall** be included if defined on the drawing with each shipment.

## SQ29 Test Coupon

**Guidance:** A applies when SQ29 is required.

- A. Test coupons **shall** be provided per the specification for each shipment.

## SQ30 Printed Wiring Board Testing

**Guidance:** A and B apply when SQ30 is required.

- A. Unless otherwise specified in Engineering Requirements Documentation, Seller **shall** perform bare board testing with these values: Test voltage -10-250V, continuity -10 ohm maximum, insulation resistance -10K ohm minimum.
1. Acceptable boards **shall** be acceptance stamped.
  2. Rejected boards **shall** be identified with the from/to path of failure and annotated either “short” or “open”.
  3. Seller **shall not** repair.
- B. Automated electro-optical inspection **shall** be required with this order if the boards have four or more layers.
1. Layer defects **shall** be reported to Buyer for authorization to repair.

## SQ31 Supplier Information Request (SIR)

**Guidance:** If SQ31 is required, then SQ01-T is not applicable.

**NOTE:** C4 Missile Defense (C4MD), Mission Readiness and Protective Services (MRPS) business units and Huntsville Manufacturing Center (HMC) operations within the Global Battle Management and Readiness (GBMR) Division must use SQ31 instead of SQ01-T.

- A. Seller **shall** utilize the Supplier Information Request (Q1-4-27-DSF-**GBMR**) for the following reasons:
- Questions or problems with the Procurement Document or Drawing Package
  - Authorization to ship nonconforming material
  - Request clarification or change of a drawing / specification requirement
  - Other significant questions or issues

**NOTE:** The Supplier Information Form (Q1-4-27-DSF-**GBMR**) is available on OASIS at:

<https://www.northropgrumman.com/Suppliers/Contracts/Quality-Documents>

## SQ32 Reserved

## SQ33 Drop Ship

**Guidance:** A and B apply when SQ33 is required.

- A. Seller **shall** deliver parts/material to address identified on the Procurement Document.
- B. A copy of all required documentation **shall** be sent to Buyer for receipt and review **prior to shipping**.

## SQ34 End Item Data Package

**Guidance:** A, B, and C apply when SQ34 is required.

- A. An End Item Data Package (EIDP) **shall** be developed, maintained, and provided and/or delivered at or before final acceptance of product by the **Northrop Grumman**, which incorporates the following information:
  - 1. Seller CoC (refer to section N of SQ01)
  - 2. Specification/drawing number and revision
  - 3. As-built configuration (Indented Parts List – may not be required for software)
  - 4. Proof of traceability requirements compliance (serial numbers, lot numbers, batch number, software version, etc.)
  - 5. Documented nonconformances
  - 6. Documented open action items
  - 7. Incorporated Change Orders, Engineering Change Proposals (ECPs), **or Engineering Change Notices (ECNs)**
  - 8. CoCs from sub-tier suppliers with objective evidence to validate the certificates
  - 9. Type of inspection performed and recorded results
  - 10. Type of test performed and recorded results
  - 11. Total quantity of items tested, quantity of items accepted, and quantity of items rejected
  - 12. Applicable GIDEP alerts, waivers, deviations, and incident reports
  - 13. Verification of compliance with useful life requirements **as applicable**, e.g., total operating time, thermal cycles, vibration time.
  - 14. Additional requirement documents as required by PO.**
- B. Buyer **shall** refuse to accept item if Seller fails to submit certifications, documentation, test data, or reports specified in the Procurement Document.



- Documentation **shall** include Northrop Grumman's source inspection if such source inspection is performed.
- C. Written approval **shall** be obtained from Buyer for any deviations to the EIDP.

### SQ35 Manufacturing Plan Submittals for Critical and Designated Parts

**Guidance:** A and B apply when SQ35 is required.

- A. When manufacturing plans are required by engineering or a Procurement Document, they will be submitted to Northrop Grumman at least 30 days prior to start of production. The submittal **shall** be on the RC/I, **SRIC**, or SIR form. The manufacturing plan **shall** contain sequential fabrication, processing, processor name, and inspection steps in the order required by the applicable process specification(s) and/or engineering drawing(s).
- B. Upon approval of supplier's manufacturing plan, the supplier **shall** control all manufacturing, processing, testing, and inspections as stated in the approved plan. No deviations, including the selection of supplier's sub-tier suppliers/processors, are permitted without Northrop Grumman prior knowledge and written authorization.

**NOTE:** Manufacturing plans can be approved without non-destructive testing (NDT) technique approval, and manufacturing of parts is allowed up to a point for NDT.

### SQ36 Tooling Requirements

**Guidance:** A and B apply when SQ36 is required.

- A. The Northrop Grumman Supplier Tooling Manual delineates requirements for suppliers who have Procurement Documents that require manufacture, rework, or use of Special Tooling (ST) and Special Test Equipment (STE). These requirements are applicable to all Northrop Grumman/Government ST and STE fabricated and/or used in the manufacture of deliverable end items, unless specifically stated otherwise on the Procurement Document. Suppliers **shall** flow down requirements identified in this manual to their sub-tier suppliers that fabricate or design tooling on their behalf.

**NOTE:** The Northrop Grumman Supplier Tooling Manual can be accessed on [OASIS](#) under the Contracting Data and Technical Data tab. Copies can also be obtained by contacting the Buyer.

<https://www.northropgrumman.com/Suppliers/Contracts/Technical-Data>

- B. At a minimum, Special Tooling (supplier manufactured or Northrop Grumman furnished) used as a media of inspection **shall** be delineated in the supplier's manufacturing plan at the applicable operation/sequence where the inspection occurs.
1. Inspection media tooling **shall** be controlled as part of the supplier's "Periodic or Calibration" system prior to use in production. Periodic tool inspection detailed requirements are covered in the Northrop Grumman Supplier Tooling Manual.

### SQ37 Qualified Die for Castings and Forgings

**Guidance:** A applies when SQ37 is required.

- A. IAW applicable material specifications as called out on the engineering drawing or Procurement Document and prior to initial production, Northrop Grumman-designed castings or forgings **shall** require a First Piece Inspection.
1. The die or pattern **shall** be qualified per the requirements established.
  2. All actual die dimensions **shall** be recorded on an AS9102 First Article Form, or equivalent, as required.
  3. The form **shall** then be submitted to the appropriate Northrop Grumman Engineer for validation and approval.
  4. Shipment **shall** be withheld pending die or pattern dimensional approval from Program.
  5. Any die/mold modification or rework requires an FAI submittal.

### SQ38 Reserved

### SQ39 Calibration Services Requirements for Supplier Providing Calibration

**Guidance:** A, B, C and D apply when SQ39 is required

- A. Seller **shall** be responsible for the calibration and applicable maintenance of any equipment, tooling, or gauges provided from the **Northrop Grumman** to the Seller under this Procurement Document.
- B. Seller's equipment calibration system **shall** be IAW one of the requirements listed **here**:
1. ANSI/NCSL Z540-1, *Calibration Laboratories and Measuring and Test Equipment*, or
  2. ISO 10012-1, *Measurement management systems — Requirements for measurement processes and measuring equipment*, or

3. ISO 17025, *General requirements for the competence of testing and calibration laboratories*
- C. Seller **shall** provide a data package for each service that meets the requirements of the above standards including as found and final results, acceptance criteria, and traceability to applicable national standards.
- D. Seller **shall** use calibration standards traceable to the National Institute of Standards and Technology (NIST) where applicable.

## SQ40 Counterfeit Prevention for Non-EEE Part Suppliers and Distributors

**Guidance:** Apply this clause when procuring material that is NOT electrical, electronic, or electromechanical (EEE).

- A. **Purpose:** Define and implement the requirements for Material Authenticity for Northrop Grumman suppliers and distributors of non-EEE material.
- B. **Applicable Documents:** The version of the applicable documents is the revision in effect as of the date of the Procurement Document:
  1. Society of Automotive Engineers (SAE) AS6174, *Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel*
  2. SAE AIR6273, *Terms, Definitions, and Acronyms Counterfeit Materiel or Electrical, Electronic, and Electromechanical Parts*
- C. **Definitions:** The definitions of AS6174 and AIR6273 apply to this clause.
- D. **Supplier Quality Management System / Approved Supplier Requirements:**
  1. All material delivered under the **Northrop Grumman**'s Authorized Procurement Document **shall** be authentic and traceable to the original manufacturer or mill/plant for raw materials. If documented acquisition traceability is not available, supplier **shall not** accept the Procurement Document unless supplier requests and receives Buyer authorization to validate the authenticity of material according to **Northrop Grumman**-specified requirements:
    - a. If Buyer authorizes the supplier to provide material without traceability, supplier **shall** comply with the Material Authenticity Validation Requirements.
    - b. Supplier **shall** have and implement effective counterfeit parts/material prevention processes that align with the requirements set forth herein:
      - i. Supplier QMS and Counterfeit Prevention Plan/Processes **shall** be aligned with AS6174 and DFARS 252.246-7008 and are subject to on-site assessment by **Northrop Grumman**.
      - ii. The supplier **shall** have and implement an effective Counterfeit Prevention Plan that documents: (a) its processes used for assuring that only authentic and conforming parts/material are procured and (b) its processes to be

used for risk mitigation, disposition, and reporting in the event any counterfeit parts/material are encountered in its supply chain. The Counterfeit Prevention Plan is subject to **Northrop Grumman** approval and may be disapproved at any time during the life of this Procurement Document if supplier does not provide for an appropriate level of assurance for procuring authentic and conforming materiel to **Northrop Grumman**'s satisfaction.

- iii. The supplier **shall** impose appropriate requirements on all tiers of its supply chain to ensure the substance of these requirements and the **Northrop Grumman**'s Authorized Procurement Document are met.
- iv. Supplier **shall** ensure all occurrences where it has acquired and/or provided suspect counterfeit parts/material are reported as appropriate to customers and GIDEP

**E. Northrop Grumman Audit and Surveillance Program Requirements:**

- 1. **Northrop Grumman** reserves the right to conduct periodic audits of supplier's Counterfeit Material Protection Plan/processes and associated records. Supplier **shall** make available to **Northrop Grumman** pertinent records as necessary for **Northrop Grumman** to conduct audit(s). Record retention will be the responsibility of the supplier.
- 2. The supplier **shall** ensure that **Northrop Grumman** and **Northrop Grumman**'s Customers have access to the supplier facilities and the facilities of its supply chain at all tiers, in order to verify compliance to **Northrop Grumman** requirements.

**F. Material Authenticity Validation Requirements:**

- 1. After acceptance of the Procurement Document, if the supplier discovers they are unable to comply with the supply chain traceability requirements set forth herein, supplier must contact the Buyer for further direction.
- 2. If Buyer authorizes the supplier to provide material without traceability, the supplier **shall** demonstrate to **Northrop Grumman** their capability to perform all necessary material authenticity validation tests and inspections. In proposing their approach to **Northrop Grumman**, the supplier should consider using industry standard practices (SAE AS6174 as a guide) or utilize the services of an industry-recognized third-party Material Authenticity Verification Test Facility. The Buyer must approve all Material Authenticity Validation tests in advance.

## SQ41 Service Requirements

**Guidance:** A and B apply when SQ41 is required.

- A. The Seller **shall** establish and implement a service plan that includes:

1. Provisions for ensuring personnel performing the service have the education, experience, knowledge, and/or combination thereof to successfully deliver the service.
  2. Key measures, including action thresholds, to be used to gauge the consistency, efficiency, effectiveness, and performance of the provided service.
  3. Specific actions to take when performance measurements indicate that the service is not meeting expectations.
  4. A means to obtain and incorporate customer feedback on service performance.
  5. A method to continually improve the level of service.
- B. The Seller **shall** institutionalize the service plan as part of their standard management system.

### SQ42 Staff Augmentation

**Guidance:** A, B, and C apply when SQ42 is required.

- A. The Seller **shall** establish and implement a staffing plan that includes:
1. Provisions for ensuring personnel have the education, experience, knowledge, and/or combination thereof to successfully perform job responsibilities.
  2. A system to measure and communicate individual and team performance.
  3. Specific actions to take when performance measurements indicate that resources are not meeting expectations.
  4. A means to communicate staffing changes to the Buyer. **Northrop Grumman** reserves the right to approve staffing changes for those positions deemed critical.
  5. A method to reward and incentivize employees.
- B. The Seller **shall** institutionalize the staffing plan as part of their standard management system.
- C. For Aircraft-related subcontractors and service providers:
1. Service to be accomplished IAW Code of Federal Regulations (CFR) Parts 21, 25, 91, and 145 as appropriate.
  2. All data used for design, installation, and/or maintenance **shall** be FAA approved.
  3. **Form FAA 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)**, must be provided to Northrop Grumman and/or be entered into the aircraft's records upon completion.
  4. Northrop Grumman **shall** receive aircraft in a Standard Airworthiness configuration after modification.

5. All subcontractors must complete “Northrop Grumman Subcontractor Surveys” and submit all required documents as requested.
6. Propellers and engines must have a logbook provided to Northrop Grumman upon receipt.

## SQ43 Counterfeit Prevention for EEE Part Suppliers and Distributors

**Guidance:** A, B, C, and D apply when SQ43 is required.

- A. 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.

Counterfeit part prevention processes **shall** include:

- 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
  - Verification and test methodologies to detect counterfeit parts
  - Monitoring of counterfeit parts reporting from external sources
  - Quarantine and reporting of suspect or detected counterfeit parts
- B. The following requirements apply for all EEE Parts, Components, Assemblies, and Systems procurements.
1. The Seller **shall** ensure all EEE, and electro-optical component parts delivered and/or used in the manufacture of deliverable products are from the OEM / OCM / AAM or Authorized Franchised distributor or Northrop Grumman approved Electrical/Electronic Distributors.
    - a. If supply chain traceability is not available, the Seller **shall not** accept the Procurement Document without Northrop Grumman authorization IAW the RC/I process outlined in SQ01-T or the SIR process in SQ31, whichever is applicable.
  2. Any Manufacturer or Distributor that provides Electronic Components, Assemblies, Subsystems, or Systems **shall** have a third-party certified **Quality Management System (QMS)** IAW one of the following industry standards: AS9100; AS9120; ISO 9001; **or** as defined in the contractual requirements.
  3. The Seller **shall** maintain a documented Material Authenticity / Counterfeit Part Prevention (MA/PPP) process for the avoidance, detection, mitigation, disposition,

and reporting of Counterfeit Parts that is compliant with AS5553, *Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition*, and DFARS 252.246-7007, *Contractor Counterfeit Electronic Part Detection and Avoidance System*, requirements (revision at the time of Procurement Document release) that documents:

- a. The processes used for assuring that only authentic and conforming materiel is procured, and
- b. The processes used for risk mitigation, disposition, and reporting in the event any counterfeit materiel is encountered in its supply chain.

**NOTE:** The counterfeit protection plan is subject to Northrop Grumman approval and may be disapproved at any time during the effective time period of the authorized Procurement Document if the plan does not provide for an appropriate level of assurance for procuring material in compliance with the Procurement Document to Northrop Grumman's satisfaction.

4. The Seller **shall** impose appropriate contractual requirements on all tiers of its supply chain to ensure the substance of SQ43, AS5553, DFARS 252.246-7007, and the Procurement Document are met.
5. Northrop Grumman reserves the right to audit the Seller's MA/CPP process, and associated records, at the Seller's facility.
  - a. The Seller **shall** maintain record retention IAW Procurement Document requirements and make pertinent records available to Northrop Grumman.
  - b. The Seller **shall** ensure that Northrop Grumman and Northrop Grumman's customers have access to the Seller facilities and the facilities of its supply chain at all tiers, to verify compliance with **Northrop Grumman** requirements.
6. The Seller's MA/CPP process **shall** ensure it does not receive counterfeit parts into inventory, use them in manufacturing, or inadvertently sell them to other parties.
7. The Seller **shall** ensure parts are neither used nor reclaimed and misrepresented as new.
8. The Seller **shall** ensure the following:
  - a. Acquired suspect counterfeit parts are reported to GIDEP.
  - b. Provided suspect counterfeit parts related to its Northrop Grumman contract are immediately reported to Northrop Grumman.
  - c. Appropriate corrective actions are taken on all suspect counterfeit parts.
9. Seller **shall** be a member of GIDEP, if eligible, and review and take appropriate corrective 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.

- a. If ineligible for GIDEP participation, the Seller **shall** screen other credible sources of counterfeiting information to avoid such purchase and use.
- C. For Parts/Components/Assemblies/Systems procured from a Seller that is an OEM, OCM, Franchised Distributor, or Authorized Aftermarket Seller for that specific Part/Component.
1. The Seller **shall** provide material traceability documentation with each delivered component. Minimum traceability requirements for electronic component parts **shall** include:
    - a. Clear identification of the name and location of supply chain intermediaries from the manufacturer to the direct source (OCM / OEM / AAM / Franchised-Authorized / One-Tier Removed) of the product for the Seller. Manufacturer name and address; manufacturer and/or Northrop Grumman's part number and dash number; batch identification for the item(s) such as date codes, lot codes, heat lot, serializations, or other identifications; Signature or stamp with title of Seller's authorized personnel signing the certificate.
  2. The Seller **shall** provide certification for assemblies stating that all components are traceable to the OEM/OCM or Franchised Distributor.
- D. For Parts/Components procured from a Seller that is not an OCM, Franchised Distributor, Authorized Aftermarket Seller; or if Supply Chain Traceability is unavailable, or suspected of being false, after acceptance of the Procurement Document; or if Chain of Custody to Northrop Grumman exceeds "One-Tier Removed" for that specific Part/Component.

**NOTE:** In addition to the above, distributors **shall** include their company's certification for each part number shipped.

**NOTE:** If after acceptance of the Procurement Document the Seller discovers that it is unable to comply with the supply chain traceability requirements of its Procurement Document (including electronic parts contained in procured electronic assemblies), The Seller **shall** contact the Buyer for further direction IAW the RC/I process outlined in SQ01-T or the SIR process in SQ31, whichever is applicable.

1. The Seller **shall** demonstrate the capability to have all authenticity validation tests and inspections (e.g., AS6171, IDEA-STD-1010) performed and managed per the direction of Northrop Grumman. Northrop Grumman reserves the right to disapprove the use of any facility for authenticity testing.
2. The Seller **shall** meet minimum Northrop Grumman authenticity validation requirements for procured EEE parts without traceability to the manufacturer as set forth below. The following standards may be replaced by equivalent



specifications. The version of the applicable documents is the revision in effect as of the date of the Procurement Document:

- a. AS6171, *Test Methods Standard; General Requirements, Suspect/Counterfeit, Electrical, Electronic, and Electromechanical Parts*
  - b. MIL-STD-883, *Test Method Standard – Microcircuits*
  - c. IDEA-STD-1010, *Acceptability of Electronic Components Distributed in the Open Market*
3. Standard validation **shall** include, but is not limited to:
- a. Verification of procured product per SAE AS6171.
4. Augmented validation **shall** include, but is not limited to:
- a. Verification of procured product per SAE AS6171.
    - i. (except) Replace sample X-ray inspection with X-ray inspection of 100 percent of parts per MIL-STD-883 Method 2012.
    - ii. (plus) Full parametric electrical test (100 percent of parts) at ambient temperature specified per the applicable drawing, industry/military requirements, or manufacturer's data sheet (in that order of precedence).
    - iii. (plus) Particle Impact Noise Detection (PIND) of parts with internal cavities per MIL-STD-883 Method 2020 (100 percent of components).
    - iv. (plus) Hermeticity test of sealed parts with internal cavities (fine and gross leak per MIL-STD-883 Method 1014) (100 percent of parts).
5. The results of all verification tests, inspections, and dispositions about the authenticity of the material **shall** be recorded. The record **shall** include the following:
- a. Purpose of test
  - b. Name of individual performing test
  - c. Part number
  - d. Lot number and date codes
  - e. Device type
  - f. Device manufacturer
  - g. Country of origin
  - h. Test location
  - i. Tester hardware information, e.g., model number, serial number, etc.
  - j. Load board number
  - k. Parameters tested and temperature

1. Quantity tested
6. The Seller **shall**:
  - a. Maintain verification records and results, including a copy of X-ray and digital photographs, for the parts subjected to the inspection and tests above.
  - b. Not ship parts to Northrop Grumman that fail these tests/inspections and not utilize such parts in circuit card assemblies or other products delivered to Northrop Grumman.
  - c. Maintain a separate copy of validation results and disposition. Copies **shall** be provided to Northrop Grumman IAW Procurement Document requirements or upon request.

### SQ44 DFARS 252.225-7009 Specialty Metals

**Guidance:** A and B apply when SQ44 is required. C is required only when specified.

- A. Sellers providing products containing specialty metals **shall** ensure the product is compliant with DFARS 252.225-7009, *Restriction on Acquisition of Certain Articles Containing Specialty Metals*.
- B. Sellers **shall** take the proper course of action to meet the requirements of this clause in the products delivered to **Northrop Grumman**. All government supply Procurement Document suppliers are subject to DFARS 252.225-7009, which is incorporated in **Northrop Grumman** Ts&Cs T-1 and included as an additional clause to T-2 for government commercial items per the DoD Specialty Metals requirement.

**NOTE:** Failure to comply with the specialty metals clause may adversely impact delivery of **Northrop Grumman** products in support of the War Fighter, resulting in delays in schedule and potentially expensive retrofitting throughout the supply chain. Products must comply with the Specialty Metals clause prior to delivery to **Northrop Grumman**.

#### C. Preference for Domestic Specialty Metals

This purchase order incorporates the contract clause at DFARS 252.225-7014 *Alternate 1, Preference for domestic specialty metals*. This clause was superseded in 2009 and is no longer present in the current DFARS although it still applies to purchase orders written in support of DoD prime contracts awarded prior to January 29, 2009. For the supplier's convenience, it is presented below in its entirety. When imposed, this quality clause supersedes the requirement in the General Terms and Conditions TC-03 or TC-04 (as applicable) for compliance with DFARS 252.225-7009.

**DFARS 252.225-7014 Preference for Domestic Specialty Metals (incorporating Alternate 1).**

**PREFERENCE FOR DOMESTIC SPECIALTY METALS (JUN 2005)**

(a) Definitions. As used in this clause—

(1) “Qualifying country” means any country listed in subsection 225.872-1 of the Defense Federal Acquisition Regulation Supplement.

(2) “Specialty metals” means—

(i) Steel—

(A) With a maximum alloy content exceeding one or more of the following limits: manganese, 1.65 percent; silicon, 0.60 percent; or copper, 0.60 percent; or

(B) Containing more than 0.25 percent of any of the following elements: aluminum, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, or vanadium;

(ii) Metal alloys consisting of nickel, iron-nickel, and cobalt base alloys containing a total of other alloying metals (except iron) in excess of 10 percent;

(iii) Titanium and titanium alloys; or

(iv) Zirconium and zirconium base alloys.

(b) Any specialty metals incorporated in articles delivered under this contract **shall** be melted in the United States or its outlying areas.

(c) This clause does not apply to specialty metals melted in a qualifying country or incorporated in an article manufactured in a qualifying country.

(d) The Contractor **shall** insert the substance of this clause, including this paragraph (e), in all subcontracts for items containing specialty metals.

## SQ45 Maintenance Services Requirements

**Guidance:** A, B, C, D, and E, apply when SQ45 is required

- A. Seller **shall** be responsible for the maintenance of any equipment provided to Seller under this Procurement Document and as defined in the manufacturer’s manuals, warranty agreement, and/or Return Material Authorization (RMA) agreement.
- B. Seller’s repair will use equipment that is calibrated and **shall** be IAW SQ11.
- C. Seller **shall**, at a minimum, maintain any equipment provided by the Seller under the same terms, conditions, and quality clauses as the original purchase, including the use of qualified processes and personnel as designated in the manufacturer’s manual unless otherwise specified by the maintenance Procurement Document.
- D. Seller, during the maintenance/repair, **shall** be IAW SQ01-A.
- E. Upon completion of the maintenance/repair, the Seller **shall** prepare a data package providing evidence that the maintenance was performed as required, including the nature of the actions performed and acceptance results. Handling and storage should be as specified in SQ01-L.

## SQ46 Non-Conforming Material

**Guidance:** A, B, C, D, E, F, G and H apply when SQ46 is required. If SQ46 is required, then SQ01-H is not applicable.

**NOTE:** AS Division must use SQ46 instead of SQ01-H.

- A. All material identified for delivery to Northrop Grumman Defense Systems that varies from documented print or processes **shall** be submitted to Northrop Grumman for Material Review Board (MRB) review before shipment. Non-conforming material identified at a Northrop Grumman site may be subject to a processing fee and any costs associated with the non-conformance. Supplier performance is monitored on an ongoing basis and suppliers with a history of poor performance may be required to cover the costs of third-party inspections.
- B. Suppliers do not have MRB authority on behalf of Northrop Grumman.
- C. Supplier **shall not** deliver any material that departs from drawing, specification, maintenance, or approved process requirements. Non-conforming material is to be submitted for review and disposition on the Northrop Grumman Supplier Request for Material Review Board (SRMRB) form before the material is shipped.
- D. Root Cause and Corrective Action documentation, along with all objective evidence, **shall** be submitted with any SRMRB. Failure to submit will result in rejection of SRMRB request. If dispositioned acceptable, the non-conforming part(s) must be clearly identified and segregated from conforming product. The supplier **shall** amend the lot number on the CoC and Packing Slip to include the non-conformance ID, e.g. 123456-NCxxxxx. A copy of the dispositioned and approved Northrop Grumman Nonconformance report **shall** accompany every delivery of the affected part(s). Product that does not meet Northrop Grumman requirements may be provided to Northrop Grumman only after this approval has been given.
- E. Non-conformances discovered at Northrop Grumman (receiving inspection, in process build, final inspection, testing, or not previously approved on an SRMRB request), that are supplier caused, are subject to a processing fee per rejection. Suppliers are responsible for all parts, processes, and services rendered by sub-tier suppliers.
- F. Any quality concerns or rejections as a result of a sub-tier supplier are the responsibility of the supplier. Northrop Grumman may chargeback a supplier for rework, repair, analysis, and/or travel related to non-conforming product where it has been determined that the non-conformance is supplier caused and the suppliers schedule to complete the rework/repair does not support Northrop Grumman's scheduled need for the product.
- G. Supplier **shall** notify Buyer of any systemic quality concerns that may affect the quality or performance of product already delivered to Northrop Grumman. The supplier **shall** provide prompt, written notification to Buyer if non-conforming product or process escapes are identified after shipment to Northrop Grumman.

- H. Supplier performance is reviewed by Northrop Grumman Supply Chain Management on a regular basis. Suppliers with a low performance may be subject to third-party inspection being imposed. Third-party is defined as an independent contracted inspection service acting on the behalf of Northrop Grumman, performing final inspection(s) at the supplier location to ensure Northrop Grumman requirements are met. The cost of this third-party over inspection would be at the supplier's expense.

## SQ47 Supplemental Requirements Documents

**Guidance:** A and B apply when SQ47 is required.

- A. Statement of Work (SOW): A SOW applies to this purchase order. The material supplied on this order **shall** comply with the requirements of the SOW. Contact the cognizant Buyer if you do not have a copy of the SOW.
- B. Classification of Characteristics (CC): The Northrop Grumman PO has an associated classification of characteristics or similar requirements document(s) attached to this purchase order, which **shall** be used in establishing acceptability of the order (such as minimum inspection program requirements). Any inspection requirements outlined in the supplemental documents (documentation, packaging, etc.), **shall** be submitted in accordance with any guidelines contained in the associated documents. Acceptance of the product **shall** be based upon the inspection requirements flowed down by Northrop Grumman unless otherwise stated in the purchase order.

## SQ48 Ammunition Data Card

**Guidance:** A applies when SQ48 is required.

- A. The supplier **shall** submit an Ammunition Data Card (ADC) in accordance with MIL-STD-1168, *Ammunition Lot Numbering and Ammunition Data Card*, DI-MISC-80043, *Ammunition Data Card*, and the Worldwide Ammunition-data Repository Program (WARP) requirements with each shipment of material furnished under this purchase order. All ADCs issued in conjunction with United States Government orders must use the WARP system. Records entered into the WARP system electronically **shall** have paper copies submitted to Northrop Grumman for documentation of the entry. All other orders will have paper only ADCs submitted for them unless directed otherwise by Northrop Grumman.

Unless otherwise directed, the ADC requirement is a flow-down requirement that applies to suppliers, vendors, or subcontractors. Northrop Grumman will provide a list of items requiring ADCs. Interpretation of specific questions should be clarified by the Customer/Government Representative or by contacting the Buyer administering the purchase order.

## SQ49 Ammunition Lotting Requirements

**Guidance:** A applies when SQ49 is required.

- A. The supplier **shall** perform ammunition lotting in accordance with MIL-STD-1168, *Ammunition Lot Numbering and Ammunition Data Card*. The ammunition lot number **shall** consist of:
1. A manufacturer's identification symbol,
  2. A numeric code showing the year of production,
  3. An alpha code representing the month of production,
  4. A lot interfix number followed by a hyphen,
  5. A lot sequence number when necessary, and
  6. An alpha character used as ammunition lot suffix to denote a reworked lot.

The ammunition lot number **shall** not exceed 14 characters in length and no characters will be separated by spaces. The minimum number of characters used will be 13. If a one- or two-character manufacturer's identification code is used, the remaining positions of the 3-character field will be filled by dashes (-), e.g., C--, CA-, etc. The following illustrates the construction of an ammunition lot number:

AMC75D018-124B, where

- AMC = Manufacturer's identification symbol.
- 75 = two-digit numeric code identifying the year of production.
- D = A single alpha code signifying the month of production.
- 018 = Lot interfix number.
- 124 = Lot sequence number.
- B = Ammunition lot suffix (the alpha suffix).

**NOTE:** Propellant lotting identification **shall** meet the requirements of MIL-STD-1168 Section 5 rather than the above unless otherwise agreed to in this purchase order/contract.

## SQ50 Acceptance and Description Sheets

**Guidance:** A and B apply when SQ50 is required.

- A. The supplier **shall** submit Acceptance and Description Sheets (for propellants and explosives) for each lot or batch processed. Electronic submission **shall** be made by accessing the Worldwide Ammunition Data Card Repository Program (WARP) housing the Acceptance and Description Sheets modules and populated in accordance with MIL-STD-1171, *Acceptance and Description Sheets (for Propellants and*

- Explosives*). Paper copies of the electronic WARP record **shall** be submitted to Northrop Grumman for documentation of the entry.
- B. Unless otherwise directed, the Acceptance and Description Sheets requirement is a flow-down requirement that applies to suppliers, vendors, or subcontractors. Northrop Grumman will provide a list of items requiring Acceptance and Description Sheets. Interpretation of specific questions should be clarified by contacting the Buyer administering the purchase order.

## **SQ51 Acceptance Inspection Equipment/Measurement System Evaluation**

**Guidance:** A applies when SQ51 is required.

- A. Measurement System Evaluation (MSE) requirements apply to this Purchase order. Acceptance Inspection Equipment (AIE), Inspection Procedures, and Calibration Records for AIE used to perform the inspections and tests of those characteristics specifically identified must be submitted to Northrop Grumman for approval prior to production. Product manufactured prior to approval of MSE/AIE by Northrop Grumman **shall not** be accepted for shipment without written approval by Northrop Grumman. MSE/AIE documentation **shall** contain sufficient information to allow review and approval.

AIE identification **shall** include the following:

- Part number, revision, and name.
- Specification number and paragraph, if applicable.
- Classification of characteristics number.
- Characteristic description and dimension/parameter.
- Purchase order number and revision.

Submission of standard measuring equipment **shall** include:

- Manufacturer.
- Model number.
- Accuracy.
- Calibration procedure, as applicable.

Functional gaging and laboratory equipment **shall** include:

- Gage number.
- Gage drawing (2 copies). Electronic copies are preferred; however, paper copies are acceptable with the agreement of Northrop Grumman.
- Set-up, calibration, and operating procedures, as required.

Inspection Procedures **shall** include:

- Inspection procedures for all Classification of Characteristics items as defined within all applicable requirement documents (MIL-STD, QAP, Specifications, Northrop Grumman Classification of Characteristics document, etc.)
- Visual Inspection Standards.

### SQ52 Single Lot Only

**Guidance:** A applies when SQ52 is required.

- A. All material supplied under this order **shall** be obtained from a single identifiable manufactured lot.

Departure from these requirements must be approved in writing by Northrop Grumman prior to manufacture of the deliverable product. Changes initiated by Northrop Grumman do not void this requirement.

### SQ53 Bar Codes

**Guidance:** A applies when SQ53 is required.

- A. The supplier **shall** provide 2-D Bar Codes in accordance with MIL-STD-129, *Military Marking for Shipment and Storage*, and MIL-PRF-61002, *Pressure-Sensitive Adhesive Labels for Bar Coding*. Samples of the 2-D bar codes used with this order **shall** be submitted and approved by Northrop Grumman and/or customer before production is initiated.

### SQ54 Build Readiness Review

**Guidance:** A applies when SQ54 is required.

- A. A Build Readiness Review (BRR) **shall** be used when new, complex, or unique processes or products are manufactured. Northrop Grumman needs to confirm materials and processes are accurate and conform to the:
1. Technical Design Package (TDP),
  2. process documentation,
  3. inspection requirements,
  4. test instrumentation/equipment,
  5. tooling,



6. gages, and
7. training,

and are completed prior to product build. Milestone tracking may be used to track progress and monitor schedule requirements.

## SQ55 Contamination Control Titanium

**Guidance:** A applies when SQ55 is required.

- A. Control measures **shall** be taken to preclude any type of titanium corrosion. Specific actions to be taken include but are not limited to:
  - Avoiding contamination by sulfur- or chloride-containing solvents, cadmium-plated components, and mercury.
  - Immediate degreasing when fabrication is complete, or when additional work will not be performed for eight (8) or more hours.

## SQ56 Domestic Sourcing

**Guidance:** A applies when SQ56 is required.

- A. Domestic Source Required

This item must be produced by a domestic manufacturing source. This includes any raw material used in the manufacturing of the end item. The CoC (refer to section N of SQ01) **shall** identify the original manufacturers and their lot numbers for each lot in the shipment. Multiple lots within a shipment **shall** be kept separate and clearly identified as to the original manufacturers and their lot numbers.

## SQ57 O-Rings

**Guidance:** A applies when SQ57 is required.

- A. The supplier **shall** comply with all technical, quality assurance, certification, and packaging requirements of the specification to which the O-rings are procured.

## SQ58 Inspection Records - Additional Information

**Guidance:** A applies when SQ58 is required.

- A. Inspection records **shall** identify the following items

1. Test and/or inspection procedure document number and revision level
2. Part Number
3. Serial, lot, batch, or date code numbers as applicable
4. Identification of each inspection point
5. Sample size used for inspection
6. The results of inspection
7. Identity of inspector performing the work

For parts where dimensions apply prior to coating, such as phosphate, dry film lube, or chemical agent resistant coating (CARC), the Seller **shall** include complete inspection records with the shipment certification package.

### **SQ59 Identification - Additional Information**

**Guidance:** A, B, and C apply when SQ59 is required.

- A. KITS – Purchase Orders and part numbers identified as kits **shall** be clearly identified and packaged as a kit. Each kit **shall** be individually identified in its own container. Co-mingling of sub-components between kits is not permissible.
- B. Process Samples – When process samples are returned to Northrop Grumman, they **shall** be appropriately segregated and marked with the Purchase Order Number. They should also be marked with the internal job number.
- C. Nothing in this clause replaces any part identification requirements as specified by the purchase order.

### **SQ60 Packaging, Preservation and Storage - Additional Information**

**Guidance:** A, B, C, D and E apply when SQ60 is required.

- A. Packaging peanuts **shall not** be used as packaging material.
- B. Supplier **shall** include packaging instructions as part of manufacturing process planning.
- C. When heat sealing the closure of bags, Seller **shall** leave adequate space for bag to be resealed a minimum of two additional times.
- D. Product produced that requires tamper proof seals **shall** have seals placed across any areas of internal access.

- E. Purchase Orders and part numbers identified as kits **shall** be clearly identified and packaged as a kit. Each kit **shall** be individually identified in its own container. Co-mingling of sub-components between kits is not permissible.

### **SQ61 Seller's Basic CoC - Additional Information**

**Guidance:** A applies when SQ61 is required.

- A. The certificate **shall** contain as applicable (refer to section N of SQ01):
1. Seller's Name and Location, and manufacturer's name and location if different
  2. Date of Manufacture, if applicable
  3. Country of Origin
  4. Lot or Batch number, or date code
  5. Fixed Process identifiers, as applicable
  6. Reference any non-conformance record identification numbers, as applicable
  7. Applicable specifications and their revision levels as specified on the purchasing document or drawing.

### **SQ62 Requirements for Distributors - Additional Information**

**Guidance:** A applies when SQ62 is required.

- A. The distributor **shall** have a quality system certified to
1. ISO 9120, *Petroleum and related products — Determination of air-release properties of steam turbine and other oils — Impinger method*, or
  2. ANSI/ASQ/ISO 9001, *Quality Management Systems — Requirements*, or
  3. SAE AS9100, *Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations*.

## SQ63 Manufacturing Plan Submittals for Critical and Designated Parts - Additional Information

**Guidance:** A applies when SQ63 is required.

- A. The Manufacturing Plan **shall** list the part characteristics which **shall** be inspected including the location of these inspections in manufacturing sequence, the sampling plans and quality levels, sampling procedures, the measuring and test equipment used, work instructions including revisions, criteria for approval or rejection of the product and the manner in which lot formations for product submissions are determined. Classification levels (1/2/3/A/B) **shall** be identified in conjunction with the Northrop Grumman program engineering team.

## SQ64 Critical Characteristic Control Plan

**Guidance:** A applies when SQ64 is required.

- A. The supplier **shall** prepare and submit a “control plan” for critical characteristics listed in the classification of characteristics or referred to in any other applicable documents. The supplier **shall** receive approval of the Critical Characteristic Control Plan before production is initiated. Any contract specific timelines associated with the Critical Characteristic Control Plan **shall** be communicated by the Northrop Grumman Buyer.

While product is under supplier control, Northrop Grumman assumes no liability resulting from any subcontractors’ property damage, injuries, death, or other causes of action that arise or may arise from the subcontractors’ development, use of and/or reliance on such a “control plan,” whether formally or informally approved by Northrop Grumman.

The Critical Characteristic Control Plan **shall** include the following items as a minimum:

1. Identify those aspects of the manufacturing process that can influence the creation of a critical non-conformance including the production process, work instructions/procedures, process controls, mistake proofing, inspection systems (Acceptance Inspection Equipment (AIE), Automated Acceptance Inspection Equipment (AAIE)), materials, material handling, personnel, training, and the quality management system (calibration, corrective/preventive action, control of non-conforming product, and supply chain management).
2. Contain non-conformance rates for each individual critical characteristic entering the inspection systems, the error rate of the inspection equipment associated with each characteristic, individual characteristic escape risks, and cumulative escape risk.

3. Contain procedures to address the necessary actions to be taken if a critical non-conformance is found anywhere in the production process.
4. Contain the process for notifying Northrop Grumman within twelve (12) hours of the occurrence of a critical non-conformance, including the identification of personnel responsible for reporting critical non-conformances.
5. Describe the process by which suspect material is identified, segregated, and prevented from additional use or shipment.
6. Contain how and by whom an investigation **shall** be conducted to determine the root cause of a non-conformance and required corrective actions.
7. Describe the restart request process and use of any suspect material, including objective evidence of the failure analysis investigation, which **shall** be provided to Northrop Grumman as part of the restart request.
8. Address what actions are taken, and by whom, for any critical non-conformance escape found beyond the designated inspection point prior to acceptance.

Other listed characteristics **shall** be controlled in accordance with contract and specification requirements and may include all of the above elements. Northrop Grumman reserves the right to disapprove the Critical Characteristic Control Plan.

## SQ65 Statistical Process Control (SPC)

**Guidance:** A applies when SQ65 is required.

- A. The use of Statistical Process Control (SPC) is a requirement of this order. The supplier **shall** submit a Statistical Process Control plan containing the following elements/sections:
  1. Policy – Description of supplier’s SPC policy for SPC and SPC goals.
  2. Applicable Documents – Reference documents used to create the supplier’s SPC program.
  3. SPC Management Structure – Identity and relationships of departments involved in the SPC program.
  4. SPC Personnel – Listing of job titles/key personnel responsible for the specific SPC activities (application, inspection, audit, corrective action, etc.).
  5. SPC Training – Listing of: positions requiring training, position performing training, type of training required and necessary qualifications.

6. Manufacturing Controls – SPC capability study requirements. Applicable gage repeatability and reproducibility studies. Rules for when these studies are required.
7. Determination of SPC Use – How appropriate SPC controls are determined and controls for key or critical processes that are deemed not appropriate for SPC control.
8. Locating Strategy – Identify how product locating is consistently used throughout production and product validation.
9. Process Stability and Capability Criteria – Process capability studies and when applied. How capability index is calculated and frequency.
10. Process Stability and Capability Action and Analysis – Actions taken as result of capability studies and if sub-optimal or marginal process are identified. Northrop Grumman requires minimum capability ratio (Cpk) of 1.33 for major and special characteristics and 2.0 for critical characteristics.
11. Control Chart Policy – Types of charts, criteria for sampling, procedures for control limits.
12. Vendor/Subcontractor Purchase Controls – Supplier requirements for SPC.
13. Determination of Adequacy of Supplier Controls – methods utilized to determine that suppliers have adequate controls.
14. SPC Audit System – Description of the supplier’s SPC Audit System.
15. SPC Records – Identify various records to be used in support of SPC and describe their use.
16. SPC Detailed Plans – Describe control of specific manufacturing process/operation parameters or characteristics. Northrop Grumman form QA-F052 may be used to facilitate this planning.

If SPC is not used for required critical, major, or special characteristics, the supplier **shall** identify those characteristics and the alternate method of control in the Process Control Document (PCD) and detail plan.

The supplier **shall** not submit SPC data with this order unless specifically requested to do so in the PO or agreed upon SPC Plan.

NGDS reserves the right to monitor the supplier’s SPC program/performance at the supplier’s facility via surveillance or audit for those processes or characteristics controlled by SPC.

## SQ66 First Article Acceptance Test (FAAT)

**Guidance:** A applies when SQ66 is required.

- A. A customer First Article Acceptance Test (FAAT) is required in conjunction with this Purchase Order. Northrop Grumman requires that a “pre”-FAAT be conducted at the supplier site before the customer FAAT occurs unless, otherwise directed by NGDS, to provide greater confidence the material will meet customer FAAT requirements. The FAAT **shall** be conducted in accordance with the requirements of all Specifications, Print, Quality Assurance Provisions, FAAT Plan, Technical Data Package or other documents as applicable. NGDS reserves the right to witness and/or perform surveillance by NGDS personnel, Government and/or NGDS customer representatives in support of this purchase order/contract, which will be communicated via the FAAT plan or this purchase order/contract. Notification for FAAT timing **shall** be submitted to Northrop Grumman at least 15 days before the planned start of the FAAT.

## SQ67 Indentured As-Built Configuration

**Guidance:** A applies when SQ67 is required.

- A. The supplier **shall** provide an As Built Configuration List (ABCL) with the data package for each shipment. The ABCL **shall** show the as-designed, as-built, and as-delivered configuration of each serialized item and component at every level where serialization exists. ABCL format **shall** include the following:
1. Part Number
  2. Revision
  3. Nomenclature
  4. Serial Number

## SQ68 Key Characteristics

**Guidance:** A applies when SQ68 is required.

- A. When Northrop Grumman drawing, specification, and/or purchase order includes “key characteristic” requirements, the supplier **shall** establish and maintain a process to measure, control, and monitor the variation of key characteristics using SAE AS9103, *Variation Management of Key Characteristics*, as a guide.
- B. Key characteristics are the features of a material or part whose variation has a significant influence on product fit, performance, service life, or manufacturability. Supplier **shall** identify key characteristics on which to monitor and report on during

production. Any key characteristics identified on Northrop Grumman drawings **shall** be included in the key characteristics identified by the Supplier.

#### 4.0 Acronyms

The following acronyms are used in this plan.

Acronym	Definition
AAM	Authorized Aftermarket Manufacturer
AAIE	Automated Acceptance Inspection Equipment
ABCL	As Built Configuration List
ADC	Ammunition Data Card
AIE	Acceptance Inspection Equipment
A2LA	American Association for Laboratory Accreditation
ANSI	American National Standards Institute
BQRPS	Baseline Quality Requirements Planning System
AS	Aerospace Standard
AS	Armament Systems
ASQ	American Society for Quality
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BRR	Build Readiness Review
CARC	Chemical Agent Resistant Coating
CC	Classification of Characteristics
CFR	Code of Federal Regulations
CMMI	Capability Maturity Model Integration
CoC	Certificate of Conformance
COTS	Commercial Off The Shelf
Cpk	Capability ratio
CPP	Counterfeit Part Prevention
CSI	Critical Safety Items
DFARS	Defense Federal Acquisition Regulation Supplement
DoD	Department of Defense
DODISS	Department of Defense Index of Specification and Standards
DSA	Defense Supply Agency
ECN	Engineering Change Notice
ECP	Engineering Change Proposal
EEE	Electrical, Electronic, and Electromechanical
EIA	Electronic Industries Alliance
EIDP	End Item Data Package
ESD	Electrostatic Discharge
FAA	Federal Aviation Administration
FAAT	First Article Acceptance Test
FAI	First Article Inspection
FAIR	First Article Inspection Report



<b>Acronym</b>	<b>Definition</b>
FAR	Federal Aviation Regulation
FOD	Foreign Object Debris
FSDO	Flight Standards District Office
<b>GBMR</b>	<b>Global Battle Management and Readiness</b>
GIDEP	Government Industry Data Exchange Program
GSC	Global Supply Chain
IAW	In Accordance With
IDEA	Independent Distributors of Electronics Association
<b>IHS</b>	<b>Information Handling Services</b>
ISO	International Organization for Standardization
IT	Information Technology
ITIL	Information Technology Infrastructure Library
JEDEC	Joint Electron Device Engineering Council
<b>M&amp;P</b>	<b>Manufacturing and Production</b>
MA	Material Authenticity
MIL	Military
MRB	Material Review Board
<b>MSE</b>	<b>Measurement System Evaluation</b>
MSDS	Material Safety Data Sheet
MSFC	Marshall Space Flight Center
NDT	Non-Destructive Testing
<b>NADCAP</b>	<b>National Aerospace and Defense Contractors Accreditation Program</b>
<b>NIST</b>	<b>National Institute of Standards and Technology</b>
<b>OASIS</b>	<b>On-line Automated Supplier Information System</b>
OCM	Original Component Manufacturer
OEM	Original Equipment Manufacturer
<b>PCD</b>	<b>Process Control Document</b>
PIND	Particle Impact Noise Detection
<b>PO</b>	<b>Purchase Order</b>
Q-Clauses	Quality Requirements
QML	Qualified Manufacturers line
QMS	Quality Management System
QPL	Qualified Parts List
RC/I	Request for Change/ Information
RMA	Return Material Authorization
RMS	Return Material Authorization
SAE	Society of Automotive Engineers
<b>SCAR</b>	<b>Supplier Corrective Action Request</b>
SEI	Software Engineering Institute
SEM	Scanning Electron Microscope
SIR	Supplier Information Request
<b>SOW</b>	<b>Statement of Work</b>
<b>SPC</b>	<b>Statistical Process Control</b>
SQAR	Supplier Quality Assurance Requirements

<b>Acronym</b>	<b>Definition</b>
<b>SRIC</b>	<b>Supplier Request for Information/Change</b>
<b>SRMRB</b>	<b>Supplier Request for Material Review Board</b>
<b>ST</b>	<b>Special Tooling</b>
<b>STE</b>	<b>Special Test Equipment</b>
<b>TDP</b>	<b>Technical Design Package</b>
<b>Ts&amp;Cs</b>	<b>Terms and Conditions</b>
<b>U.S</b>	<b>United States</b>
<b>U.S.C</b>	<b>United States Code</b>
<b>UID</b>	<b>Unique Identification</b>
<b>WARP</b>	<b>Worldwide Ammunition-data Repository Program</b>
<b>WHMA</b>	<b>Wiring Harness Manufacturer's Association</b>