

ERP1 Mission Systems Quality Clauses Supplier Quality Requirements

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1.0 General

This document contains standard quality requirements (MSQ Clauses), which Quality & Mission Excellence should apply to requisitions before approval and submittal to Global Supply Chain for incorporation into Procurement/Subcontract agreements for ERP1 SAP Procurements (ERP2 uses Q31500-02-MSF, Supplier Quality Notes, for Quality Requirements). Programs with unique contract requirements not satisfied by these clauses are required to flow down other requirements to suppliers and subcontractors to comply with the Programs' contracts. The revision of this document that applies is the one in effect on the date of the original purchase order.

2.0 Definitions

- A. Buyer: The Northrop Grumman legal entity identified on the face of the Order.
- B. Seller (AKA Supplier, Subcontractor): The legal entity that is the contracting party with the Buyer with respect to the procurement document.
- C. Procurement Document: The Purchase Order or subcontract between the parties.
- D. Item: The product or service contracted for by the procurement document.
- E. Rework: Previously documented and approved process that brings the product into conformance with defined requirements.
- F. Repair: A condition where the product cannot conform to engineering standards; however, a subsequent operation can be performed to return the product to a condition that **shall** meet fit, form, and function.

3.0 Supplier Quality Requirements

The following Mission Systems Quality (MSQ) Clauses are a requirement of the procurement document when explicitly specified by a clause number. Unless specifically identified, the revision of the applicable documents and standards referenced herein **shall** be the latest version that is in effect as of the date of the release of the Procurement/Subcontract document.

MSQ-1 General Quality Assurance Requirements

Guidance: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O and P all apply when MSQ-1 is required. Exclusions should be noted on the Purchase Order / Subcontract.

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 Buyer 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 non-conforming 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 prior Buyer's 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.
3. Seller **shall** notify Buyer in writing of any proposed change in design, fabrication method, or process prior to delivery of the item to the Buyer.
 - a. Articles, which have incorporated approved changes, **shall** be appropriately identified.
4. Resubmittal of Rejected Items: Any item rejected by Buyer and subsequently resubmitted to Buyer **shall** be clearly identified as a resubmitted item, indicating the procurement document number and Buyer's reject document number in Seller's Certificate of Conformance.
5. Notification of Facility Change: Seller **shall** not use any production, manufacturing, and/or processing facilities that differ from facilities previously approved by Buyer without first notifying Buyer and affording Buyer 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 Buyer

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without first notifying Buyer and affording Buyer an opportunity to examine and approve such facilities for compliance with supplier quality requirements.

6. Changing of Test Facility: Seller **shall** not change a test facility or use another test facility to meet specification/drawing requirements without prior Buyer's written approval, if a specific test facility was previously approved by Buyer as provided for in the procurement document.
7. Change of Management/Owner: Seller **shall** notify Buyer when a significant change in management or ownership has occurred.

B. RESPONSIBILITY FOR CONFORMANCE

1. Neither surveillance, inspection, and/or test made by Buyer or its representatives or U.S. Government representatives at either Seller's or Buyer's facility, or Seller's compliance with all applicable supplier 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. Quality requirements **shall** include, but are not limited to, 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 items for Seller's product
 - f. Inspection of procured items to documented procedures
 - g. Control of non-conforming material, including corrective action

C. BUYER SURVEY, SURVEILLANCE, AUDITS AND INSPECTION

1. Buyer **shall** have the right to conduct surveys, audits, and surveillance of Seller facilities, and those of Seller's sub-tier suppliers with prior coordination with Seller, to determine capability to comply, and to verify continuing compliance, with the requirements of the procurement document.
2. Buyer **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 Buyer's facility, unless otherwise specified in the procurement document.

D. RESERVED

E. CORRECTIVE ACTION REQUEST

1. When a quality problem exists with Seller's items, Buyer **may** require Seller to complete a Corrective Action Request.
2. Responses to Corrective Action Requests **shall** be timely and **shall** include the following information:
 - a. Root cause of the deficiency
 - b. Action taken to correct the specific deficiency
 - c. Action taken to prevent recurrence of the deficiency
 - d. Action taken to determine if other products are affected
 - e. Effectivity date for implementation of identified corrective and preventive actions
 - f. Verification that the corrective and preventive 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 included in 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. Seller **shall** be responsible for validating the accuracy and stability of tools, gages, and test equipment used to demonstrate that any item conforms to the requirements specified in the procurement document.

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2. Documented schedules **shall** be maintained for periodic calibration to adequate standards.
3. Objective evidence of calibrations **shall** be recorded and made available for Buyer's review.

H. NONCONFORMING MATERIALS

1. Seller **shall** provide and maintain a corrective action and disposition program for non-conforming materials.
2. Seller **shall** provide for control, segregation, and identification of non-conforming materials detected at Seller's facilities.
3. Seller **shall** not have MRB disposition authority without Buyer's written authorization.
4. No repair **shall** be allowed outside of the specific specification limits unless prior written approval is obtained by Seller from Buyer.
5. RESERVED

I. INSPECTION RECORDS

1. Seller **shall** maintain records of all inspections and tests performed on any item delivered to Buyer.
2. Records **shall** identify any non-conformance and **shall** be made available for Buyer's review.
3. Seller **shall** ensure records are available for review by Customers and Regulatory Authorities in accordance with 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. Buyer reserves the right to reject any plan which 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 can be achieved without jeopardizing product quality.
3. Sample inspection **shall** be in accordance with the applicable Buyer specification. When not specified by Buyer, military standard sampling plans, e.g., from ANSI/ASQCZ1.4-11, MIL-STD-414, or handbooks H016, H017, and H018, **may** be used.
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, or
3. If articles are supplied in individual or multi-unit containers the container **shall** reveal the appropriate identification.

L. PACKAGING, PRESERVATION, AND STORAGE

1. Seller **shall** incorporate good commercial practices for preservation and packaging of all articles that apply to this Purchase Order / Subcontract, unless otherwise stated within the Purchase Order / Subcontract or attached documentation.
2. Seller **shall** identify each package permanently and legibly with Purchase Order / Subcontract 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 materials which are volatile, toxic, or emit fumes, which are harmful to human health, **shall** be properly contained in accordance with applicable health and safety requirements. 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 plainly 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.

M. STORAGE AND SHELF LIFE

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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.
2. 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.
3. 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.
4. In no case **shall** materials or articles be supplied to Buyer with less than 75% of its useful life or cycles remaining; however, Seller **shall** verify that sufficient operating life and environmental margin remains to meet the specified requirements of the procurement document.

N. RESERVED

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

When the items supplied are required to be Qualified Parts List (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) in accordance with 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.

MSQ-2 Buyer Inspection/Surveillance

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

A. SOURCE INSPECTION

1. Buyer **shall** be present to perform source inspection at Seller's facilities or where designated in the Purchase Order / Subcontract 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 Buyer.
3. Seller **shall** provide reasonable inspection facilities for Buyer to verify conformance to requirements.
4. Seller **shall** provide inspection/test data and reports to Buyer's Source Inspector indicating which characteristics, parameters, dimensions, etc., were actually tested/inspected for validation to Buyer's specification/drawing requirements.
5. After Buyer's Source Inspection, any rework or test of the item, including any nonscheduled entry, such as removal of a panel, cover, or enclosure **shall** void the source inspection.
6. For any nonscheduled entry, rework, or test, Seller **shall** request Buyer to repeat source inspection.
7. Buyer's purchasing department **shall** be notified at a minimum of seven (7) workdays prior to commencement of these activities to allow for arrangements for Buyer's quality representative to be present during inspection and test.

B. BUYER IN-PROCESS INSPECTION

1. Buyer **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 Buyer to verify conformance to requirements.
5. After Buyer's Source Inspection, any rework or test of the item, including any nonscheduled entry, such as removal of a panel, cover, or enclosure **shall** void the source inspection.

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6. For any nonscheduled entry, rework, or test, Seller **shall** request Buyer 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. BUYER PRECAP INSPECTION

Items in the procurement document **shall** require pre-cap inspection by Buyer's Quality Field Engineering subsequent to the 100 percent pre-cap visual inspection performed by Seller.

D. BUYER SCANNING ELECTRON MICROSCOPE ANALYSIS

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

E. BUYER SOURCE SURVEILLANCE

1. Buyer's Quality Field Engineering **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 Buyer to verify the quality of the procured product.

F. BUYER SOFTWARE AUDITS

Buyer **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 MSQ-7 is required on the Purchase Order / Subcontract.
3. Buyer **shall** review and provide authorization to ship predicated on the results of the photos and test data when test data is required with MSQ-7 on the Purchase Order / Subcontract.

MSQ-3 U.S. Government Source Inspection (NASA)

Guidance: A, B, C, D and E all apply when MSQ-3 is required.

- A. All work under the procurement document **shall** be subject to inspection and test by the U.S. Government at any time and place.
- B. The U.S. Government representative, who has been delegated NASA quality assurance functions for the procurement document, **shall** be notified immediately upon receipt thereof.
- C. The U.S. Government representative **shall** be notified three working days in advance of the time the items are ready for inspection or test.
- D. In the event the 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 representatives in the performance of their duties.

MSQ-4 U.S. Government Source Inspection (DoD)

Guidance: A, B, C, D and E all apply when MSQ-4 is required.

- A. U.S. Government source inspection **shall** be required prior to shipment from Seller's facility.
- 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.

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- 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 representatives in the performance of their duties.

MSQ-5 Raw Material Documentation Requirements

Guidance: Select each section that is required A, B or C.

- A. Shipment of materials, whether raw, semi-finished, or finished, **shall** be accompanied by a Certificate of Conformance/ from Seller, stating at a minimum:
 - 1. Material identification by specification number and material conditions, where applicable.
 - 2. The raw material manufacturers or mill's lot or batch number.
 - 3. A statement of raw material conformance to applicable requirements.
 - 4. The name and location of the raw material manufacturer or mill.
- B. All items defined in MSQ5-A with the addition of actual chemical/physical test results that substantiate compliance with the applicable raw material and/or specification requirements **shall** be provided.
- C. Seller **shall** provide a Certificate of Traceability showing unbroken Chain of Custody from the lowest level component to configured end item(s).

MSQ-6 Control of Special Processes

Guidance: A and B or C apply when MSQ-6 is required.

- A. The supplier is responsible to ensure that all special processes performed either by the supplier or their subcontractor on Northrop Grumman Corporation designed machined/fabricated parts, including mechanical parts mounted on printed wiring board assemblies, be approved by Northrop Grumman Mission Systems (NGMS) and/or accredited by the National Aerospace and Defense Contractors Accreditation Program (NADCAP). This requirement does not absolve the supplier of the responsibility to ensure that all purchase order requirements are being met. Any detailed information regarding the NADCAP accreditation process including the audit schedule can be obtained from Performance Review Institute (PRI) at <http://p-r-i.org/nadcap/>.

All relevant drawing and purchase order specifications must be included within the flow down requirements to the processing subcontractors. Where specifications require dimensional results for validation, the processing subcontractor or supplier shall provide objective evidence that shall be reviewed and maintained to assure process requirements are being met. Objective evidence may be in the form of XRF dimensional and plating alloy content reports that document plating thickness for each plating process. No attribute PASS/FAIL results or general certificates of conformance will be acceptable for dimensional results. Retain all Nondestructive Testing (NDT) records and results including x-ray film for a minimum of four (4) years from product shipment. Casting x-ray film is to be retained by the foundry.

A list of approved Northrop Grumman Corporation Special Process suppliers may be obtained through the buyer. It is the supplier's responsibility to notify NGMS Supplier Quality of any special process source selection changes, to perform a Delta First Article (if required by purchase order or quality system) identifying the change in source and validating that the process was properly performed.

NGMS Special Processes are specifically identified as the following however it may include others identified as such in the purchase order or drawing notes. Also, unless otherwise directed by the PO or drawing notes, the latest revision of the current specification shall be used.

Chemical Processing:

Anodize (Aluminum) – MIL-A-8625
Cadmium Plating – SAE AMS-QQ-P-416
Chromate Conversion – MIL-DTL-5541
Copper Plating – SAE AMS 2418
Gold Plating – ASTM B488

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Nickel Plating, General – AMS 2403 / AMS-QQ-N-290
Electroless Nickel – AMS 2404
Electrodeposited Silver – ASTM B700
Electrodeposited Tin Plating – ASTM B545
Tin-Lead – SAE AMS-P-81728
Zinc Phosphorous – TT-C-490
Zinc Plating – ASTM B633
Cadmium Plating (Vacuum Deposit) – AMS-C-8837
Brush Plating of Ferrous & Non-Ferrous Alloys – GSS 8060
Brush Plating Electrodeposition – MIL-STD-865

Non-Destructive Testing:

Dye Penetrant Testing – ASTM E1417
Radiography Examination – ASTM E1742
Magnetic Particle Examination – ASTM E1444

Heat Treatment:

Heat Treat of 6061 Aluminum Assy's Using Forced Hot Air – 347R223
Heat Treat of 6061 Aluminum Assy's Using Water Spray Quenching – 252K325
Heat Treat of Aluminum – SAE AMS 2770
Heat Treat of Aluminum Castings – SAE AMS 2771
Heat Treat of Mumetal – PDS 83032AA
Heat Treat of Stainless – SAE AMS 2759/3 and SAE AMS 2759/1
Heat Treat of Steel – SAE AMS-H-6875
Heat Treat of Titanium – AMS 2801 / AMS-H-81200
Magnetic Permeability Annealing -- 990476
Heat Treating and Spray Quenching of 6061 Aluminum – PS83020VB
Hot Isostatic Pressing – PS83050RB
Heat Treat of Magnesium Castings – SAE AMS 2768

Composites

Glass Fiber Base - Plastic Laminates for Structural Applications – GSS11100
Metallic & Non-Metallic Honeycomb Core And Facings - Sandwich Construction – GSS11300

Structural Adhesive Bonding

Structural Adhesive Bonding – GSS20000
Adhesive Bonding Of Metallic & Non-Metallic, General Purpose – GSS22650

Finishes And Coatings

Application of Epoxy Polyamide Primer – MIL-PRF-23377 (GSS4310)
Application of Polyurethane Topcoat – MIL-PRF-85285 (GSS4510)
Application of Rain Erosion Coating and Anti-Static Coating – AMS3138 (GC130CU)
Polysiloxane Coating - PS83680PC

Non-Destructive Testing

Radiographic Inspection – ASTM E1742 & MIL-STD-453
Magnetic Particle Inspection – NGT23K
Ultrasonic Inspection – GSS16100, GSS16101 & GSS16102
Penetrant Inspection (etch prior) – GT23

Welding:

Fusion Welding – AWS D17.1 / MIL-STD-2219
Welding and Casting Standard – MIL-STD-278
Spray Coatings Aboard Naval Ships – MIL-STD-2138
Electron Beam Welding – SAE AMS 2681
Spot Welding Group 1, Class A, B & C – AWS D17.2
Spot Welding Group 2, Class A, B & C – AWS D17.2
Steel Structural Welding – AWS D1.1
Aluminum Structural Welding – AWS D1.2
Stainless Steel Structural Welding - AWS D1.6
Non-Critical Welding – MIL-STD 1370

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Brazing:

Torch Brazing – AWS C3.4
Furnace Brazing – AWS C3.6
Vacuum Braze – AWS C3.7
Dip Braze – AWS C3.7

Other processes not identified herein are defined as Standard Processes and are not subject to the NADCAP and/or NGMS approval requirements, unless otherwise specified. Selection of subcontract suppliers for Standard Processes shall be controlled by the supplier's Quality Management System.

Northrop Grumman Mission Systems reserves the right to perform periodic assessments for any special processes identified in the purchase order, drawing or specification. These reviews are intended to ensure suppliers are performing processes to their internal procedures and requirements.

- B. Buyer approval of special processes shall not relieve the supplier of responsibility for exercising the control measures necessary to ensure delivered items conform to the requirements of the Purchase Order/Subcontract.
- C. Sub-contract and Contract manufacturers shall have the responsibility for 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.

MSQ-7 Inspection / Test Data

Guidance: A and B apply when MSQ-7 is required.

- A. When Buyer's specifications or procurement document require test data to be recorded during the performance of acceptance testing, a paper or preferably electronic copy of the recorded data, showing evidence of Seller's inspection and verification of performance, **shall** accompany each shipment.
- B. Data **shall** meet the requirements of Buyer's specifications or procurement document and, at a minimum, be identified with:
 1. Buyer's Purchase Order / Subcontract number and change notice number
 2. Part number
 3. Lot numbers, serial numbers, or date codes of items tested
 4. Drawing/specification and revision used
 5. Type of test performed
 6. Identification number of test equipment used
 7. Total quantity of items tested, quantity of items accepted, and quantity of items rejected
 8. Any codes, keys, or other information necessary to interpret Seller data

MSQ-8 Radiographic / Computer Tomography Inspection

Guidance: A, B, C, D, and E apply when MSQ-8 is required. Exclusion of B or C is acceptable based on inspection method.

- 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 ASTM E 1742 "Radiographic Examination", MIL-STD-883 "Test Method and Procedures for Microelectronics", 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 Buyer.

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- E. Serial number location and x-ray position **shall** be recorded as part of, or attached to, the report.

MSQ-9 Requirements for Distributors

Guidance: A, B and C apply when MSQ-9 is required unless only 1 subclause is specified.

- A. The Distributor (a Seller other than the Manufacturer) **shall** certify that the articles delivered under this Purchase Order / Subcontract conform to the applicable requirements of Buyer's or Manufacturer's specifications for the article ordered.
- B. The Distributor Certification of Conformance **shall** include the following information:
1. The origin of manufacture
 2. Part number
 3. Applicable traceability information (date lot code, etc.)
 4. Results of testing or special inspection, as required
 5. Dated signature of authorized Seller Representative
 6. Items identified by Buyer number **shall** have complete information as to the original manufacturer and original manufacturer's part number
- C. The Distributor Certificate of Traceability **shall** provide documented traceability and unbroken Chain of Custody from the OCM/OEM to the Seller.

MSQ-10 Seller Inspection Reporting Requirements

Guidance: A, B, C, and D apply when MSQ-10 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.

MSQ-11 Calibration System Requirements

Guidance: A and B apply when MSQ-11 is required.

- 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 Purchase Order / Subcontract.
- B. Seller's equipment calibration system **shall** be in accordance with one of the four requirements listed below:
1. MIL-STD-45662A or
 2. ANSI/NCSS Z540 or
 3. ISO 10012-1
 4. ISO 17025

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MSQ-12 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: MSQ-12A-1a, MSQ-12A-1b, MSQ-12A-1c, or MSQ-12A-1d.

A. SOFTWARE QUALITY PROGRAM

1. Seller **shall** establish a Software Quality Assurance Program that conforms to the standards specified
 - a. AS9006, Deliverable Aerospace Software Supplement for AS9100,
 - b. ISO/IEC 12207, Software Life Cycle Processes,
 - c. Capability Maturity Model Integration (CMMI) - Level 3 or higher, or
 - d. Federal Aviation Administration 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, 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 Buyer and these records **shall** be available for Buyer review.

MSQ-13 Electrostatic Discharge Control

Guidance: A, B, C and D apply when MSQ-13 is required.

- A. Seller **shall** provide and maintain a program for Electrostatic Discharge (ESD) control for hardware items to be furnished for this procurement in accordance with one or more of the following standards:
 1. MIL-STD-1686 Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (excluding Electrically Initiated Explosive Devices)
 2. ANSI-S20.20 Parts, Electrical and Electronic, Assemblies and Equipment, Protection of (excluding Electrically Initiated Explosive Devices), for the Development of an Electrostatic Discharge Control Program
 3. EIA 625 Requirements for Handling Electrostatic Discharge Sensitive Devices
 4. MSFC-STD-1800 ESD Control for Propellant and Explosive Devices
 5. DoD 4185.26m Contractors Safety Manual for Ammunition and Explosives
- B. Seller's ESD control program **shall** be subject to review and approval by Buyer.
- 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 Buyer 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.

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MSQ-14 NASA Quality Program Provisions

Guidance: Select A or B.

- A. Seller **shall** provide and maintain a quality assurance program in accordance with NASA Quality Publication NHB 5300.4 (1B), "Quality Program Provisions for Aeronautical and Space System Contractors".
- B. Seller **shall** provide and maintain a quality assurance program in accordance with NHB 5300.4 (1B), "Quality Program Provisions for Aeronautical and Space System Contractors", that have been tailored as specified in Buyer's procurement document.

MSQ-15 NASA Inspection System Provisions

Guidance: Select A or B.

- A. Seller **shall** provide and maintain an inspection system in accordance with NASA Publication NHB 5300.4(1C), "Inspection System Provisions for Aeronautical and Space System Material, Parts, Components, and Services".
- B. Seller **shall** provide and maintain an inspection system in accordance with NHB 5300.4(1C), "Inspection System Provisions for Aeronautical and Space System Material, Parts, Components, and Services," that have been tailored as specified in Buyer's procurement document.

MSQ-16 NASA Safety, Reliability, Maintainability and Quality Provisions

Guidance: Select A or B.

- A. Seller **shall** provide and maintain a quality program in accordance with NASA Quality Publication NHB 5300.4(1D-2), "Safety, Reliability, Maintainability, and Quality provisions for the Space Shuttle Program".
- B. Seller **shall** provide and maintain a quality program in accordance with NASA Quality Publication NHB 5300.4(1D- 2), "Safety, Reliability, Maintainability, and Quality Provisions for the Space Shuttle Program", that have been tailored as specified in Buyer's procurement document.

MSQ-17 Prohibited Material (Electrical, Electronic & Electromechanical Parts)

Guidance: Buyer will specify A and/or B. C always applies when MSQ-17 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.

MSQ-18 Semiconductor Certification

- A. Shipment of electronic devices using semiconductors **shall** be accompanied by a certification of conformance from Seller, stating at a minimum:
 1. The name and location of the original manufacturer of any semiconductor used in the fabrication of the end item.
 2. The semiconductor lot number.

MSQ-19 Quality Management System

Guidance: Select the appropriate Quality Management System requirement.

- A. ISO 9001 Compliant

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1. Seller **shall** provide and maintain a Quality System 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 Buyer.
- B. ISO 9001 Registered
1. Seller **shall** provide and maintain a Quality System that is 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. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- C. AS9100 Compliant
1. Seller **shall** provide and maintain a Quality System 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 Buyer.
- D. AS9100 Registered
1. Seller **shall** provide and maintain a Quality System that is 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. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- E. Capability Maturity Model Integration (CMMI) - Level 3
1. Seller **shall** provide and maintain a Quality System 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. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- F. Capability Maturity Model Integration (CMMI) - Level 4
1. Seller **shall** provide and maintain a Quality System that meets the requirements of CMMI Level 4.
 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having Software Engineering Institute (SEI) CMMI 4 rating from an accredited appraiser.
 - a. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- G. Capability Maturity Model Integration (CMMI) - Level 5
1. Seller **shall** provide and maintain a Quality System that meets the requirements of CMMI Level 5.
 2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by having Software Engineering Institute (SEI) CMMI 5 rating from an accredited appraiser.
 - a. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- H. Capability Maturity Model Integration (CMMI) for Services - Level 3
1. Seller **shall** provide and maintain a Quality System 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 Software Engineering Institute (SEI) CMMI for Services 3 rating from an accredited appraiser.
 - a. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- I. Capability Maturity Model Integration (CMMI) for Services - Level 4
1. Seller **shall** provide and maintain a Quality System 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 Software Engineering Institute (SEI) CMMI for Services 4 rating from an accredited appraiser.
 - a. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- J. Capability Maturity Model Integration (CMMI) for Services - Level 5
1. Seller **shall** provide and maintain a Quality System 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 Software Engineering Institute (SEI) CMMI for Services 5 rating from an accredited appraiser.
 - a. Buyer **shall** reserve the right to conduct an assessment of Seller's Quality System.
- K. Quality Management System
1. Seller **shall** have a formalized Quality System.

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2. Seller's capability to perform satisfactorily to these requirements **shall** be demonstrated by a successful Buyer's Supplier Assessment Audit of the seller's Quality System.

MSQ-20 First Article Inspection

Guidance: All apply when MSQ-20 is required.

- A. First Article Inspection (FAI) **shall** be performed in accordance with the requirements of AS9102 ("Aerospace First Article Inspection Requirement") and/or any other requirements otherwise set forth in this Purchase Order / Subcontract, and the following requirements.
 - a. Seller is responsible for determining the method of performing FAI and **shall** use a form that contains all required information as specified in AS9102. The Seller may request to use Buyer's FAI form, which satisfies this requirement.
 - b. Requirements used **shall** be per the AS9102 revision level established at time of purchase order issuance.
 - c. Where product does not meet the intent of "first production run", as defined within AS9102, 100% of all product characteristics **shall** be inspected.
 - d. The following optional fields in the AS9102 FAI Report are considered mandatory for Buyer; all other fields **shall** be completed in accordance with the form instructions.
 - i. Form 1, Blocks: 11, 12, 21, 22
 - ii. All Conditionally Required (CR) fields on FAI Report Forms 2 and 3 are considered mandatory for Buyer.
 - iii. FAI Form Blocks **shall** not contain open fields. To ensure each field of the FAI has been reviewed, the Seller **shall** mark all open or unused fields "N/A".
- B. First Article Inspection by Seller **shall** be performed prior to product acceptance by Buyer.
 1. For Buyer on-site Source Inspected product inspection and acceptance by Buyer of the first article manufactured against this part number **shall** be required prior to delivery to Buyer.
 2. For product deliveries that do not include on-site Buyer Source Inspection, Seller **shall** segregate and identify the FAI unit in a separate container when delivering to Buyer. The FAI report is to accompany the FAI unit.
- C. Seller **shall** submit a First Article Report to Buyer demonstrating compliance with the requirements in the Purchase Order / Subcontract.
 1. The report **shall** provide evidence of acceptance by the Seller's authorized Quality Assurance representative.
 2. FAI Reports and supporting documents **shall** be retained at the Seller and provided at no cost to Buyer when requested.
- D. Seller **shall** afford the Buyer the opportunity to witness the performance of First Article Inspection/Testing. See MSQ-2A.7 regarding notification requirements.

Seller may obtain copies of the AS9102 Forms and the AS9102 Frequently Asked Questions information from <http://www.sae.org/iaqg/publications/faq9102.pdf>.

MSQ-21 Inspection data for Critical to Function (CTF) Drawings

- A. Model Based Product Defined designs and CTF drawings **shall** require recorded data for all defined critical dimensions per ASME Y14.41.

MSQ-22 Contamination / Foreign Object Debris (FOD) Control

Guidance: A, B, C and D apply when MSQ-22 is required.

- A. Seller **shall** maintain a FOD prevention program.
- 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. Buyer **shall** have the right to perform inspections, verifications, and FOD prevention program audits at Seller's facility to ensure program documentation and effectiveness.
- D. Articles ordered under this Purchase Order / Subcontract **shall** be protected by Seller from contamination or damage from foreign objects during processing, testing, inspection, handling, and packaging prior to delivery to Seller.

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MSQ-23 Unique Identification (UID) (DFARS 252.211-7003)

Guidance: A and B always apply when MSQ-23 is required. C and D are required only when they are specified.

- A. Defense Federal Acquisition Regulation Supplement (DFARS) clause 252.211-7003, Item Identification and Valuation **shall** be applied to this Purchase Order / Subcontract.
- B. UID **shall** be in compliance with MIL-STD-130 (current version at time of Purchase Order / Subcontract 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 @ website – <http://bpn.gov/iuid/>. Latest version at time of PO receipt.

MSQ-24 Solder Workmanship Standard

- 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”.

MSQ-25 Solderability

Guidance: A, B, and C apply when MSQ-25 is required.

- A. Material submitted with each shipment **shall** have had solderability testing performed in accordance with one or more of the following specifications:
 - 1. MIL-STD-750, Method 2026
 - 2. MIL-STD-883, Method 2003
 - 3. MIL-STD-202, Method 208
 - 4. MIL-P-55110
 - 5. MIL-P-50884
 - 6. J-STD-001
 - 7. J-STD-002
 - 8. J-STD-003
- B. Seller **shall** supply a copy of the certification by an accredited agency to one or more of the specifications listed in paragraph A with each order.
- C. If, during the life of that Purchase Order / Subcontract, the certification is revoked or the certification expires, all efforts against this Purchase Order / Subcontract **shall** be stopped.
 - 1. Buyer **shall** be notified in writing within twenty four hours.

MSQ-26 Material Outgoing to Seller (Customer Furnished Property)

Guidance: A, B, C, and D apply when MSQ-26 is required.

- A. Materials furnished to Seller, by Buyer, **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’s Procurement 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’s Procurement.

MSQ-27 Cable Workmanship Standard

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- A. Workmanship **shall** be in accordance with IPC/WHMA-A-620 "Requirements and Acceptance for Cable and Wire Harness Assemblies".

MSQ-28 Printed Wiring Board

Guidance: A and B apply when MSQ-28 is required.

- A. Printed Wiring Boards fabricated under this Purchase Order / Subcontract **shall** comply with the requirements of IPC-A-600 "Acceptability of Printed Boards", IPC-6011 "Generic Performance of Printed Boards", and IPC-6012 "Qualification and Performance Specification for Rigid Printed Boards".
- B. Coupons **shall** be included if defined on the drawing with each shipment.

MSQ-29 Test Coupon

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

MSQ-30 Printed Wiring Board Testing

Guidance: A and B apply when MSQ-30 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 4 or more layers.
1. Layer defects **shall** be reported to Buyer for authorization to repair.

MSQ-31 Supplier Information Request (SIR)

- A. Seller **shall** utilize the Supplier Information Request Form for authorization to ship nonconforming material or to request clarification or change of a drawing / specification requirement. Access this form at <http://www2.northropgrumman.com/suppliers/Pages/MSQualityDocs.aspx> , Supplier Information Request.

MSQ-32 Variation Management AS9103

- A. Seller **shall** implement a Variation Management program in accordance with AS9103, Variation Management of Key Characteristics.

MSQ-33 Drop Ship

Guidance: A and B apply when MSQ-33 is required.

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

MSQ-34 Seller's Basic Certificate of Conformance

Guidance: A applies when MSQ-34 is required unless subclause B is specified. Clause C applies if material traceability must be proven.

- A. A Certification of Conformance **shall** be provided with each shipment with the following information at a minimum:
1. Northrop Grumman Purchase Order / Subcontract and Line Item Number(s)

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2. Identifying nomenclature as identified by the purchase order (i.e., Item Name, Part Number, Revision, Serial Numbers).
 3. Quantity shipped
 4. Conformance Clause: "The items furnished per Buyer'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)
 5. The Certification of Conformance **shall** be signed by Seller's duly authorized representative (including electronic signatures)
- B. The seller **shall** provide their standard Certificate of Conformance to certify that the articles delivered under this Purchase Order / Subcontract conform to the applicable requirements of Buyer's or Manufacturer's specifications for the article ordered.
- C. *The seller **shall** maintain records of material traceability showing unbroken Chain of Custody from the lowest level component to configured end item(s) and records of material traceability **shall** be provided to the buyer upon request.*

MSQ-35 End Item Data Package (EIDP)

- A. An End Item Data Package (EIDP) **shall** be developed, maintained, provided and/or delivered at or before final acceptance of product by the Buyer, which incorporates the following information:
1. Seller Certificate of Conformance (refer to MSQ-34)
 2. Specification/drawing number and revision
 3. As-built configuration (Indented Parts List – may not be required for software)
 3. Proof of traceability requirements compliance (serial numbers, lot numbers, batch number, software version, etc.)
 4. Documented non-conformances
 5. Documented open action items
 6. Incorporated Change Orders (Engineering Change Proposals (ECPs))
 7. Certificate of Conformances from sub-tier suppliers with objective evidence to validate the certificates
 8. Type of inspection performed and recorded results
 9. Type of test performed and recorded results
 10. Total quantity of items tested, quantity of items accepted, and quantity of items rejected
 11. Applicable Government Industry Data Exchange Program (GIDEP) alerts, waivers, deviations, and incident reports
 12. Verification of compliance with useful life requirements, e.g., total operating time, thermal cycles, vibration time
 13. Certificate of Traceability if MSQ-34c is invoked on the Purchase Order / Subcontract
- 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 Buyer's source inspection if such source inspection is performed.
- C. Written approval **shall** be obtained from Buyer for any deviations to the EIDP.

MSQ-36 – This note is superseded by MSQ-47

MSQ-37 – This note is superseded by MSQ-48

MSQ-38 – This note is superseded by MSQ-47

MSQ-39 – This note is superseded by MSQ-48

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MSQ-40 - Material Authenticity/Counterfeit Part Prevention Requirements for Non-EEE Material Suppliers and Distributors

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

Purpose:

Define and implement the requirements for Material Authenticity for Northrop Grumman suppliers and distributors of non-EEE material.

Definitions

The definitions of AS6174 and AIR6273 apply to this clause.

Applicable Documents:

The version of the applicable documents is the revision in effect as of the date of the purchasing agreement

SAE AS6174	Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel
SAE AIR6273	Terms, Definitions, and Acronyms Counterfeit Materiel or Electrical, Electronic, and Electromechanical Parts

Supplier Quality Management System / Approved Supplier Requirements:

- A. All material delivered under the Buyer's Authorized Purchase Order or Agreement **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 Buyer's Purchase Order or Agreement unless Supplier requests and receives Buyer authorization to validate the authenticity of material according to Buyer-specified requirements:
1. If Buyer authorizes the supplier to provide material without traceability supplier shall comply with the Material Authenticity Validation Requirements.
 2. Supplier shall have and implement effective counterfeit parts/material prevention processes that align with the requirements set forth herein:
 - a. Supplier Quality System and Counterfeit Prevention Plan/Processes shall be aligned with AS6174 and are subject to on-site assessment by Buyer.
 - b. 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/materiel are procured and (b) its processes to be used for risk mitigation, disposition, and reporting in the event any counterfeit parts/materiel are encountered in its supply chain. The Counterfeit Prevention Plan is subject to Buyer approval, and may be disapproved at any time during the life of this Purchase Order/Subcontract if Supplier does not provide for an appropriate level of assurance for procuring authentic and conforming materiel to Buyer's satisfaction.
 - c. The Supplier shall impose appropriate requirements on all tiers of its supply chain to ensure the substance of these requirements and the Buyer's Authorized Purchase Order/Subcontract are met.
 - d. Supplier shall ensure all occurrences where it has acquired and/or provided suspect counterfeit parts/material are reported as appropriate to customers and GIDEP

Buyer Audit and Surveillance Program Requirements:

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

Material Authenticity Validation Requirements:

- A. After acceptance of the PO 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.
- B. If Buyer authorizes the Supplier to provide material without traceability, the Supplier **shall** demonstrate to the Buyer their capability to perform all necessary material authenticity validation tests and inspections. In proposing their approach to the Buyer, the Supplier should consider using industry standard practices (SAE AS6174 as a guide) or utilize the services of an industry-recognized 3rd party Material Authenticity Verification Test Facility. All Material Authenticity Validation tests must be approved in advance by the Buyer.

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MSQ-41 This note is superseded by MSQ-47.C

MSQ-42 Information Technology (IT) Services Management for suppliers providing IT services

Guidance: Select any one of A, B, C, or D

- A. ISO 20000 Compliant
 - 1. Seller **shall** provide and maintain an 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 Buyer.
- B. ISO 20000 Registered
 - 1. Seller **shall** provide and maintain an IT Service Management System that is 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. Buyer **shall** reserve the right to conduct an assessment of Seller's IT Service Management System
- C. 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 Buyer.
- D. ITIL Certified
 - 1. Seller **shall** provide and maintain an IT Service Management System that is 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. Buyer **shall** reserve the right to conduct an assessment of Seller's IT Service Management System

MSQ-43 Calibration Services Requirements for Supplier Providing Calibration

Guidance: A, B, and C apply when MSQ-43 is required

- A. Seller **shall** be responsible for the calibration and applicable maintenance of any equipment, tooling, or gauges provided from the Buyer to the Seller under this procurement agreement.
- B. Seller's equipment calibration system **shall** be in accordance with one of the four requirements listed below:
 - 1. MIL-STD-45662A
 - 2. ANSI/NCSL Z540
 - 3. ISO 10012-1
 - 4. ISO 17025
- 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.

MSQ-44 Maintenance Services Requirements

Guidance: A, B, C, D, and E, **shall** apply when MSQ-44 is required

- A. Seller **shall** be responsible for the maintenance of any equipment provided to seller under this procurement agreement 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 in accordance with MSQ-11.
- C. Seller **shall**, as 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 purchasing agreement.
- D. Seller, during the maintenance/repair, **shall** be in accordance with MSQ-1A.

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- 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 MSQ-1 part L.

MSQ-45 Service Requirements

Guidance: A and B apply when MSQ-45 is selected

- 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 to successfully deliver the service.
 2. Key measures of service performance including action thresholds. Key measures to be used to gauge the consistency, efficiency and effectiveness of the service being provided.
 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.

MSQ-46 Staff Augmentation

- 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 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. The Buyer 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

MSQ-47 Material Authenticity/Counterfeit Part Prevention Requirements for Electrical, Electronic, and Electromechanical (EEE) Part Suppliers and Distributors

Guidance: Apply this clause when procuring electrical, electronic, and electromechanical (EEE) components.

Instructions for Suppliers

The supplier **shall** be required to apply one of clauses MSQ-47.A, B, or C to all electrical, electronic, and electromechanical (EEE) parts procured under contract to Northrop Grumman. The supplier **shall** use the clause based on their status as an Original Component Manufacturer (OCM) or their relationship to the OCM.

Supplier Status	MSQ-47.A	MSQ-47.B	MSQ-47.C
Original Component Manufacturer (OCM), OCM-Authorized Distributor or Authorized Aftermarket Manufacturer	X		
Distributor that obtains EEE parts exclusively from OCMs, OCM-authorized Distributors, and Authorized Aftermarket Manufacturers		X	
All other Suppliers of EEE Parts			X

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MSQ-47.A For Parts/Components procured from an Original Component Manufacturer (OCM), OCM-Authorized Distributor or Authorized Aftermarket Manufacturer

The requirements in this clause apply if the material provided under this order is Electrical, Electronic, or Electromechanical (EEE) Parts as defined by SAE International Aerospace Standard AS5553, *Counterfeit Electrical, Electronic and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition*.

If material provided under this order is an assembly containing EEE Parts, then the requirements of MSQ-48 apply instead of this clause.

Applicable Documents:

The version of the applicable documents is the revision in effect as of the date of the purchasing agreement

SAE AS5553	Counterfeit Electrical, Electronic, Electromechanical (EEE) Parts; Avoidance Detection Mitigation, and Disposition
SAE AIR6273	Terms, Definitions, and Acronyms Counterfeit Materiel or Electrical, Electronic, and Electromechanical Parts

Definitions

The definitions of AS5553 and AIR6273 apply to this clause.

Requirements:

- A. If the Supplier is NOT the Original Component Manufacturer (OCM), an Authorized Aftermarket Manufacturer, or an Authorized Distributor of the EEE parts delivered under this order, the Supplier **shall** not quote nor accept this order;
- B. If the Supplier is the OCM of the EEE parts delivered under this order, the requirements of paragraphs C – J and their subparagraphs do not apply;
- C. The Supplier shall have processes to track back to the OCM all EEE Parts delivered under this order and provide documentary evidence of this traceability upon Buyer request. Examples of traceability documents include (but are not limited to): packing slips; receiving documents; purchase orders; and shipping documents. Certificates of Conformance from non-authorized distribution sources are not adequate to meet traceability requirements;
 - a. The Supplier shall not accept this order if the Supplier is unable to track back to the OCM EEE parts to be delivered under this order;
- D. The Supplier shall implement a Counterfeit EEE Parts Control Plan in compliance with AS5553;
 - a. The Supplier's plan shall document processes used for (a) ensuring that only authentic and conforming materiel is procured; and (b) risk; mitigation, disposition, and reporting in the event any counterfeit materiel is encountered in its supply chain;
 - b. The Supplier shall only provide EEE part(s) under this order for which the Supplier has an OCM Authorized Distribution agreement;
 - c. The Supplier shall maintain objective evidence that it provided EEE part(s) under this order which the Supplier obtained under its Authorized Distribution agreement with the OCM of the part(s);
 - d. The Supplier shall implement inventory control processes to prevent comingling of EEE part(s) for delivery under this order with parts that are not compliant to the counterfeit prevention requirements of this order;
- E. The Supplier shall have a third-party registered quality management system in accordance with one of the following industry standards: AS9100, AS9120, or ISO9001 (or equivalent global standard) unless otherwise specified in this order. This registration requirement takes precedence over the compliance requirement in MSQ-19A and MSQ-19C if they are applied to this purchase agreement;
- F. The Supplier shall notify the Buyer in writing if the Supplier ceases to be an Authorized Distributor or Authorized Aftermarket Manufacturer for any EEE part to be delivered under this order;
- G. The Supplier shall screen credible sources of counterfeiting information and communicate issues or concerns to their supply base as appropriate. For Suppliers located in the United States or Canada, the screening process must include the screening of the Government Industry Data Exchange Program (GIDEP);
 - a. The Supplier shall ensure all Suspect Counterfeit EEE Parts are reported to GIDEP in a timely manner;
 - b. The Supplier shall report to the Buyer all Suspect Counterfeit EEE Parts relating to this order;
 - c. The Supplier shall respond to any suspect counterfeit inquiries made by the Buyer regarding the authenticity of products provided by the supplier;
 - d. The Supplier shall take corrective and preventive actions on all suspect counterfeit parts;
- H. The Supplier shall impose applicable counterfeit prevention requirements on all tiers of its supply chain;
- I. Northrop Grumman reserves the right to conduct audits, review EEE Part Counterfeit Control Plans, and may, at its discretion, deem the Supplier unacceptable if the plan or processes are considered insufficient;

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- a. The Supplier shall make records available, as necessary to conduct audit(s). The Supplier is responsible for record retention in accordance with the requirements of this order;
 - b. The Supplier shall provide Northrop Grumman and Northrop Grumman's customers access to Supplier facilities and the facilities of its supply chain at all tiers, to enable verification of compliance with the requirements of this order;
- J. The Supplier shall maintain controls for ESD and moisture sensitive devices per ANSI-ESD S20.20 and JEDEC-STD-033, respectively, unless otherwise specified in this order;

The Supplier shall notify the Buyer of any noncompliance with the requirements of this clause. Supplier exceptions to any requirement in this clause shall be submitted in writing to the Buyer for adjudication by Northrop Grumman Mission Systems Supplier Quality.

MSQ-47.B For Parts/Components procured from a distributor that obtains EEE parts exclusively from Original Component Manufacturers (OCMs), OCM-Authorized Distributors or Authorized Aftermarket Manufacturers

The requirements in this clause apply if the material provided under this order is Electrical, Electronic, or Electro-mechanical (EEE) Parts as defined by SAE International Aerospace Standard AS5553, Counterfeit Electrical, Electronic and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition.

If material provided under this order is an assembly containing EEE Parts, then the requirements of MSQ-48 apply instead of this clause.

Applicable Documents:

The version of the applicable documents is the revision in effect as of the date of the purchasing agreement

SAE AS5553	Counterfeit Electrical, Electronic, Electromechanical (EEE) Parts; Avoidance Detection Mitigation, and Disposition
SAE AIR6273	Terms, Definitions, and Acronyms Counterfeit Materiel or Electrical, Electronic, and Electromechanical Parts

Definitions

The definitions of AS5553 and AIR6273 apply to this clause.

Requirements:

- A. The Supplier shall only accept this order and deliver EEE part(s) under this order if, for all customers:
 1. the Supplier obtains the EEE part(s) delivered under the customer's purchase order directly from the Original Component Manufacturer (OCM);OR
 2. the Supplier obtains the EEE part(s) delivered under the customer's purchase order from an Authorized Distributor or Authorized Aftermarket Manufacturer for the part(s);
- B. The Supplier shall have processes to track back to the OCM all EEE Parts delivered under this order and provide documentary evidence of this traceability upon Buyer request. Examples of traceability documents include (but are not limited to): packing slips; receiving documents; purchase orders; and shipping documents. Certificates of Conformance from non-authorized distribution sources are not adequate to meet traceability requirements;
 1. The Supplier shall not accept this order if the Supplier is unable to track back to the OCM EEE parts to be delivered under this order;
- C. The Supplier shall implement a Counterfeit EEE Parts Control Plan in compliance with AS5553;
 1. The Supplier's plan shall document processes used for (a) ensuring that only authentic and conforming materiel is procured; and (b) risk mitigation, disposition, and reporting in the event any counterfeit materiel is encountered in its supply chain;
 2. The Supplier shall only provide EEE parts that it obtained exclusively from OCMs, their Authorized Distributors, and their Authorized Aftermarket Manufacturers;
 3. The Supplier shall maintain objective evidence that it provides EEE parts obtained exclusively from OCMs, their Authorized Distributors, and their Authorized Aftermarket Manufacturers;
 4. The Supplier shall implement inventory control processes to prevent comingling of EEE parts for delivery under this order with parts that are not compliant to the counterfeit prevention requirements of this order;
- D. The Supplier shall have a third-party registered quality management system in accordance with one of the following industry standards: AS9100, AS9120, or ISO9001 (or equivalent global standard) unless otherwise specified in this order. This registration requirement takes precedence over the compliance requirement in MSQ-19A and MSQ-19C if they are applied to this purchase agreement;

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- E. The Supplier shall notify the Buyer in writing if the Supplier's supplier ceases to be the OCM, an OCM-Authorized Distributor or Authorized Aftermarket Manufacturer for any EEE part to be delivered under this order;
- F. The Supplier shall screen credible sources of counterfeiting information and communicate issues or concerns to their supply base as appropriate. For Suppliers located in the United States or Canada, the screening process must include the screening of the Government Industry Data Exchange Program (GIDEP);
 - 1. The Supplier shall ensure all Suspect Counterfeit EEE Parts are reported to GIDEP in a timely manner;
 - 2. The Supplier shall report to the Buyer all Suspect Counterfeit EEE Parts relating to this order;
 - 3. The Supplier shall respond to any suspect counterfeit inquiries made by the Buyer regarding the authenticity of products provided by the supplier;
 - 4. The Supplier shall take corrective and preventive actions on all suspect counterfeit parts;
- G. The Supplier shall impose applicable counterfeit prevention requirements on all tiers of its supply chain;
- H. Northrop Grumman reserves the right to conduct audits, review EEE Part Counterfeit Control Plans, and may, at its discretion, deem the Supplier unacceptable if the plan or processes are considered insufficient;
 - 1. The Supplier shall make records available, as necessary to conduct audit(s). The Supplier is responsible for record retention in accordance with the requirements of this order;
 - 2. The Supplier shall provide Northrop Grumman and Northrop Grumman's customers access to Supplier facilities and the facilities of its supply chain at all tiers, to enable verification of compliance with the requirements of this order;
- I. The Supplier shall maintain controls for ESD and moisture sensitive devices per ANSI-ESD S20.20 and JEDEC-STD-033, respectively, unless otherwise specified in this order;
- J. The Supplier shall notify the Buyer of any noncompliance with the requirements of this clause. Supplier exceptions to any requirement in this clause shall be submitted in writing to the Buyer for adjudication by Northrop Grumman Mission Systems Supplier Quality.

MSQ-47.C – For Parts/Components procured from a supplier that is not an Original Component Manufacturer (OCM), Franchised Distributor, Authorized Aftermarket Supplier for that specific Part/Component, and is not a Distributor that obtains EEE parts exclusively from Original Component Manufacturers (OCMs), OCM-Authorized Distributors or Authorized Aftermarket Manufacturers.

The requirements in this clause apply if the material provided under this order is Electrical, Electronic, or Electro-mechanical (EEE) Parts as defined by SAE International Aerospace Standard AS5553, Counterfeit Electrical, Electronic and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition.

If material provided under this order is an assembly containing EEE Parts, then the requirements of MSQ-48 apply instead of this clause.

Applicable Documents:

The version of the applicable documents is the revision in effect as of the date of the purchasing agreement

SAE AS5553	Counterfeit Electrical, Electronic, Electromechanical (EEE) Parts; Avoidance Detection Mitigation, and Disposition
SAE AS6171	Test Methods, General Requirements, Suspect/Counterfeit, Electrical, Electronic, and Electromechanical Parts.
SAE AIR6273	Terms, Definitions, and Acronyms Counterfeit Materiel or Electrical, Electronic, and Electromechanical Parts
IDEA-STD-1010	Acceptability of Electronic Components Distributed in the Open Market

Definitions

The definitions of AS5553 and AIR6273 apply to this clause.

Requirements:

- A. The Supplier shall implement a Counterfeit EEE Parts Control Plan in compliance with AS5553;
 - 1. The Supplier's plan shall document processes used for (a) ensuring that only authentic and conforming materiel is procured; and (b) risk mitigation, disposition, and reporting in the event any counterfeit materiel is encountered in its supply chain;
- B. The Supplier shall have a third-party registered quality management system in accordance with one of the following industry standards: AS9100, AS9120, or ISO9001 (or equivalent global standard) unless otherwise specified in this order. This registration requirement takes precedence over the compliance requirement in MSQ-19A and MSQ-19C if they are applied to this purchase agreement;

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- C. The Supplier shall screen credible sources of counterfeiting information and communicate issues or concerns to their supply base as appropriate. For Suppliers located in the United States or Canada, the screening process must include the screening of the Government Industry Data Exchange Program (GIDEP);
1. The Supplier shall ensure all Suspect Counterfeit EEE Parts are reported to GIDEP in a timely manner;
 2. The Supplier shall report to the Buyer all Suspect Counterfeit EEE Parts relating to this order;
 3. The Supplier shall respond to any suspect counterfeit inquiries made by the Buyer regarding the authenticity of products provided by the supplier;
 4. The Supplier shall take corrective and preventive actions on all suspect counterfeit parts;
- D. The Supplier shall impose applicable counterfeit prevention requirements on all tiers of its supply chain;
- E. Northrop Grumman reserves the right to conduct audits, review EEE Part Counterfeit Control Plans, and may, at its discretion, deem the Supplier unacceptable if the plan or processes are considered insufficient;
1. The Supplier shall make records available, as necessary to conduct audit(s). The Supplier is responsible for record retention in accordance with the requirements of this order;
 2. The Supplier shall provide Northrop Grumman and Northrop Grumman's customers access to Supplier facilities and the facilities of its supply chain at all tiers, to enable verification of compliance with the requirements of this order;
- F. The Supplier shall maintain controls for ESD and moisture sensitive devices per ANSI-ESD S20.20 and JEDEC-STD-033, respectively, unless otherwise specified in this order;
- G. The Supplier shall notify the Buyer of any noncompliance with the requirements of this clause. Supplier exceptions to any requirement in this clause shall be submitted in writing to the Buyer for adjudication by Northrop Grumman Mission Systems Supplier Quality;
- H. Regardless if evidence of supply chain traceability to the OCM/OEM/AAM is available, the Seller shall submit all parts to verification of authenticity prior to shipment. These verifications shall be performed by one or more of the following test service provider(s):
- SMT Corp (14 High Bridge Road, Sandy Hook, CT 06482-1601);
 - Integra Technologies (3450 North Rock Road Bldg. # 100, Wichita, KS 67226-1351); or
 - DPA Components International (2251 Ward Ave., Simi Valley, CA 93065-7556);
- I. Unless otherwise specified by the Buyer's PO, verification shall include the following:
Verify procured product per:
1. IDEA-STD-1010 Documentation and Packaging Inspection; and
 2. SAE International AS6171 Moderate Risk Model 2, which includes the following inspections and tests:
 - a. External Visual Inspection, General;
 - b. External Visual Inspection, Detailed;
 - c. External Visual Inspection, Remarking;
 - d. External Visual Inspection, Resurfacing;
 - e. External Visual Inspection, Part Dimensions;
 - f. XRF, Lead Finish Analysis;
 - g. XRF, Material Composition;
 - h. Delid/Decapsulation Physical Analysis, Internal Inspection;
 - i. Radiological, 2D
Note: Seller shall verify any mixed construction and/or construction anomalies within a single date code identified by the Delid/Decapsulation or X-Ray Inspection to be authentic by the OCM/OEM/AAM or validated against a known authentic component prior to shipment;
 - j. Electrical, for active parts: DC Test at ambient temperature, for passive parts: value measurement at ambient temperature
Note: The Seller shall hold the lot for NGC review if DC test failures exceed 10% of the lot quantity, unless authorized in writing by the Buyer. Product containing these parts may not be shipped unless authorized in writing by the Buyer;
 - k. For bare die products, inspect for consistent markings on the die and the wafer packaging and verify die size and geometry (visual inspection per Mil-Std-883, Method 2010, 2017 or 2032 as applicable). The

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seller shall verify die topology and markings are authentic with the OCM/OEM/AAM or by comparison to other authentic components or images. Mixed construction shall be cause for rejection;

- I. For programmable parts containing non-volatile memory, perform checksum verification on 100% of the parts to confirm they are not programmed.
- J. Documentation - Seller shall provide a summary report of all inspection and test results for each product lot. Unless otherwise specified, Seller shall include detailed results/records of inspections and tests (e.g., X-ray film/digital images, XRF results (e.g. copy of the XRF plot), delid/DPA photographs, parametric electrical test results). Seller shall retain all records/summary reports, images, and data of inspections and testing results for the minimum retention period of five (5) years.

These records/summary reports shall be stored in a manner to protect against damage from fire, flood, etc. The records/summary reports shall be readily (within 72 hrs) retrievable upon request by the Buyer. The summary report shall include the following information, as a minimum:

 1. The manufacturer and part number;
 2. Lot size being shipped;
 3. Manufacturer date code(s) or lot code comprising the shipment lot;
 4. The sample size (or 100%) used for each inspection and test;
 5. The date the inspections and tests were performed;
 6. An indication of whether each individual inspection and test passed, failed or was inconclusive (or questionable). Product that failed any of the inspections and tests or exhibited inconclusive (or questionable) results, shall not be shipped without prior authorization by the Buyer;
 7. A clear statement whether the lot of parts is determined to be authentic or suspect counterfeit;
 8. The specific inspections and tests that were performed and the test conditions (e.g., General Visual, Detailed Visual, marking/Surface Exam, X-ray, etc.);
 9. The accept/reject criteria that applies for each of the inspections and tests (e.g., Documentation and Packaging Inspection per IDEA-STD-1010;
 10. The signature and/or stamp of the individuals that performed the inspections and tests, and the authorized individual that accepted the inspection and test results. These signatures/stamps shall represent that the individual understands the penalties associated with fraud under Authority Having Jurisdiction;
 11. The level of magnification used for the Detailed Visual Inspection;
 12. The name and address of any applicable subcontracted third party inspection or test facility;
 13. Description of whether testing: used a known authentic part as a comparison or used absolute measurements and compared the results to a Customer-supplied source Control Drawing or OCM data or a combination of the two methods was employed or used a comparison against average lot data when OCM-data or a known authentic part was not available;
 14. Results of all electrical testing;
 15. All parametric data;
 16. All chemical data;
 17. All Photography;
 18. Photographic documentation of all parts prior to and during Counterfeit Detection Analysis shall be taken to preserve all evidence of findings (positive or negative). At the onset of any Counterfeit Detection Analysis, all typical part and packaging markings shall be recorded in an image prior to any destructive analysis. Subsequently, a minimum of two recorded images are required to document the baseline characteristics of any analyzed part prior to performance of any tests. These shall be supplemented with other recorded images or photographs as required to document all observed defects or anomalies. Microscopy techniques such as color, dark field, phase contrast, and interference contrasts shall be used as necessary to enhance image clarity. When SEM is performed each image shall be labeled or otherwise identified with the applicable serial number, accelerating voltage, tilt, and the magnification used. Results of SEM energy dispersion spectroscopy (EDS) shall be supplied when appropriate. All original photographs in any analysis shall be provided electronically with the final analysis report;
- K. The Supplier shall maintain authentication records and results, including a copy of X-ray and digital photographs, for the parts that are subjected to inspections and tests to verify authenticity;
- L. The Supplier shall not ship parts to Northrop Grumman which fail these tests and inspections, nor use such parts in circuit card assemblies or other products delivered to Northrop Grumman;

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M. The Supplier shall maintain a separate copy of authentication results and disposition. Copies shall be provided to the Buyer in accordance with purchase order requirements or upon request.

MSQ-48 Material Authenticity/Counterfeit Parts Requirements for Electrical, Electronic, and Electromechanical (EEE) Assembly Suppliers

Guidance: Apply this clause when procuring electrical, electronic, or electromechanical (EEE) assemblies.,

The requirements in this clause apply if the material provided under this order is an assembly containing Electrical, Electronic, or Electro-mechanical (EEE) Parts as defined by SAE International Aerospace Standard AS5553, Counterfeit Electrical, Electronic and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition. If the material provided under this order is a EEE Part, then the requirements of MSQ-47 apply instead of this clause.

Applicable Documents:

The version of the applicable documents is the revision in effect as of the date of the purchasing agreement

SAE AS5553	Counterfeit Electrical, Electronic, Electromechanical (EEE) Parts; Avoidance Detection Mitigation, and Disposition
SAE AIR6273	Terms, Definitions, and Acronyms Counterfeit Materiel or Electrical, Electronic, and Electromechanical Parts

Definitions

The definitions of AS5553 and AIR6273 apply to this clause.

Requirements:

- A. If the Supplier is NOT the Original Manufacturer, Design Authority, an Authorized Aftermarket Manufacturer, or an Authorized Distributor of the assembly to be delivered under this order, the Supplier **shall** not quote nor accept this order;
- B. The Supplier shall have processes to track back to the OCM all EEE Parts, including EEE Parts contained in assemblies, delivered under this order and provide documentary evidence of this traceability upon Buyer request. Examples of traceability documents include (but are not limited to): packing slips; receiving documents; purchase orders; and shipping documents;
 1. If the Supplier is unable to track back to the OCM EEE Parts, including EEE Parts contained in assemblies, to be delivered under this order, the Supplier shall submit an exception request to the Buyer, including documented evidence of authentication inspection/test;
- C. The Supplier shall implement a Counterfeit EEE Parts Control Plan in compliance with AS5553;
 1. The Supplier's plan shall document processes used for (a) ensuring that only authentic and conforming materiel is procured; and (b) risk mitigation, disposition, and reporting in the event any counterfeit materiel is encountered in its supply chain;
 2. If the Supplier obtains EEE Parts, including EEE Parts contained in assemblies, to be delivered under this order from a source other than (1) an Authorized Source or (2) a source who provides EEE Parts obtained exclusively from Authorized Sources, the Supplier shall submit an exception request to the Buyer, including documented evidence of authentication inspection/test;
- D. If the Supplier has not provided a EEE assembly to the Buyer within the previous thirty-six months, then the Buyer considers the Supplier to be a new EEE assembly supplier and the Supplier shall have a third-party registered quality management system in accordance with one of the following industry standards: AS9100 or ISO9001 (or equivalent global standard), unless otherwise specified in the order. This registration requirement takes precedence over the compliance requirement in MSQ-19A and MSQ-19C if they are applied to this purchase agreement. This requirement does not apply if the Supplier is the manufacturer of the assembly to be delivered and the assembly is a commercial-off-the-shelf (COTS) item;
- E. The Supplier shall screen credible sources of counterfeiting information and communicate issues or concerns to their supply base as appropriate. For Suppliers located in the United States or Canada, the screening process must include the screening of the Government Industry Data Exchange Program (GIDEP);
 1. The Supplier shall ensure all Suspect Counterfeit EEE Parts are reported to GIDEP in a timely manner;
 2. The Supplier shall report to the Buyer all Suspect Counterfeit EEE Parts relating to this order;

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3. The Supplier shall respond to any suspect counterfeit inquiries made by the Buyer regarding the authenticity of products provided by the supplier;
 4. The Supplier shall take corrective and preventive actions on all suspect counterfeit parts;
- F. The Supplier shall impose applicable counterfeit prevention requirements on all tiers of its supply chain;
- G. Northrop Grumman reserves the right to conduct audits, review EEE Part Counterfeit Control Plans, and may, at its discretion, deem the Supplier unacceptable if the plan or processes are considered insufficient;
1. The Supplier shall make records available, as necessary to conduct audit(s). The Supplier is responsible for record retention in accordance with the requirements of this order;
- H. The Supplier shall provide Northrop Grumman and Northrop Grumman's customers access to Supplier facilities and the facilities of its supply chain at all tiers, to enable verification of compliance with the requirements of this order;
- I. The Supplier shall maintain authentication records, results, and dispositions, including a copy of X-ray and digital photographs, for the parts that are subjected to inspections and tests to verify authenticity. Copies shall be provided to the Buyer in accordance with purchase order requirements or upon request;
- J. The Supplier shall not ship parts to Northrop Grumman which fail authentication inspections and tests, nor use such parts in assemblies or other products delivered to Northrop Grumman;
- K. The Supplier shall notify the Buyer of any noncompliance with the requirements of this clause. Supplier exceptions to any requirement in this clause shall be submitted in writing to the Buyer for adjudication by Northrop Grumman Mission Systems Supplier Quality.

4.0 Acronyms

Guidance: Include all acronyms used in this plan.

The following acronyms are used in this plan.

Acronym	Definition
AS	Aerospace Standard
CMMI	Capability Maturity Model Integration
CTF	Critical to Function
DFARS	Defense Federal Acquisition Regulation Supplement
DoD	Department of Defense
DSA	Defense Supply Agency
ECP	Engineering Change Proposal
EIDP	End Item Data Package
ESD	Electrostatic Discharge
FOD	Foreign Object Debris
GIDEP	Government Industry Data Exchange Program
ISO	International Organization for Standardization
MIL	Military
MRB	Material Review Board
MSDS	Material Safety Data Sheet
NASA	National Aeronautics and Space Administration
NIST	National Institute for Standard Technology
QPL	Qualified Parts List

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Acronym	Definition
SEI	Software Engineering Institute
SEM	Scanning Electron Microscope
UID	Unique Identification