



WHEN PERFORMANCE
REALLY MATTERS

SUPPLIER QUALITY AND MANAGEMENT SYSTEM REQUIREMENTS FOR AIRCRAFT GROUP AND INDUSTRIAL GROUP

SQR-1 REVISION 1.3 January, 2023 – **OBSOLETE – FOR REFERENCE ONLY**



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1.0 PURPOSE

The purpose of this document is to consolidate and communicate Moog's quality management system expectations and requirements to suppliers of parts and services used in a wide variety of application markets. The document is available to view and download from the Moog supplier portal on www.moog.com/suppliers.

2.0 CONTENTS, SCOPE & RESPONSIBILITY

This document defines the supply chain quality management system requirements applicable when goods and services are procured by Moog Aircraft group and Industrial group. The requirements herein may be modified by flow downs on the Moog purchase order (PO). Such flow downs may add additional requirements, or they may allow exceptions to requirements; therefore, it is critical that suppliers review the purchase order for all contractual flow downs.

Note: Purchase orders tied to Government orders are subject to the Supplemental Terms and Conditions found at: https://www.moog.com/content/dam/moog/literature/Corporate/Suppliers/Supplemental_Terms_and_Conditions.pdf

Unless otherwise explicitly stated in this document or modified by the purchase order, these requirements apply to all direct procurement purchase orders such as Standard Catalog Hardware (COTS) and Supplier Intellectual Property (Supplier IP).

These requirements do not apply to Moog indirect procurement of general supplies unless otherwise stated in the contract or purchase order.

3.0 DEFINITIONS

The following terms used throughout this document are consistent with ISO9000:2015 and AS9100:2016 definitions.

3.1 Counterfeit Part – An unauthorized copy, imitation, substitute, or modified part, which is knowingly misrepresented as a specified genuine part of an original or authorized manufacturer.

3.2 Critical Items – Those items having significant effect on the provision and use of the products and services; including safety, performance, form, fit, function, producibility, service life, etc.; that require specific actions to ensure they are adequately managed.

3.3 Key Characteristics – An attribute or feature whose variation has a significant effect on product fit, form, function, performance, service life, or producibility, that requires specific actions for the purposes of controlling variation.

3.4 Product Safety – The state in which a product can perform to its designed or intended purpose without causing unacceptable risk of harm to persons or damage to property.

3.5 Special Requirements – Those requirements identified by the customer, or determined by the organization, which have high risk of not being met, thus requiring their inclusion in the operational risk management process. Factors used in the determination of special requirements include product or process complexity, experience, and product or process maturity.

3.6 Manufacturing Lot – Defined as all parts manufactured at the same time from the same materials, or processed together through all operations, unless otherwise specified in the Moog drawing.

3.7 Frozen Process – An approved and controlled process, commonly associated with critical items, key characteristics, and special requirements, where no changes can be made to the method of manufacture and inspection or control of the process without prior formal approval by Moog.

3.8 Standard Catalog Hardware or COTS – Standard Catalog Hardware is defined as a part or material (such as a chemical) that conforms to an established industry or national authority published specification, having all characteristics identified by text description, National/Military Standard Drawing, or catalog item.

3.9 Supplier Intellectual Property (IP) – Non-Moog design hardware that is also not COTS. Moog neither owns nor has access to design data. Functional test data is often delivered with the product as usually Moog does not possess the inspection/test equipment necessary for validation.

3.10 Deviation – A non-conformance or non-compliance with Moog requirements as defined on drawings, specifications, SQR-1, supplementary quality clauses, and any other purchase order flow-downs.

3.11 Escape (or Escapement) – Nonconformities (deviations from requirements) that were produced, not detected nor remedied, and subsequently sent to the customer.

3.12 Concession – Written authorization from Moog to the supplier to use or release a product that does not conform to the specified requirements. Waiver/concession and product quality escape differ with respect to the point in time when a non-conformance is detected. The need for a waiver/concession is evident before delivery to the customer, while a product quality escape is identified after delivery to the customer.

3.13 Records- Controlled historical evidence documenting the design, manufacture, test, inspection, disposition, or acceptance of parts, material, or other deliverables. Records include but are not limited to: Approved Certificates of Conformity, Test Reports, Raw Material Certifications, Special Process Certifications, First Article Inspection Reports (FAIR), Route Cards/Travelers, and Calibration Records.

3.14 Acceptance Authority Media- The means defined by the organization to document the status of outputs with respect to but not limited to conformity, configuration, monitoring and measurement requirements and identification throughout the product life cycle. Media include inspection stamps, electronic signatures, passwords, wet signatures, and any other means identified by the QMS.

Reference: https://www.sae.org/aaqg/audit_information/2017/minn/acceptance_authority.pdf.

3.15 Conventional Machining- Conventional machining operations that involve direct contact between tool and work piece (e.g., turning, milling, grinding etc.), whereas unconventional machining does not (e.g. EDM, ECM)

3.16 Life Limited item-any part for which a limited life is established based upon usage life, chemical reaction life, etc. For commercial items, these are often also called shelf-life items. In terms of aircraft, it also means any part for which a mandatory replacement limit is specified in the type design, the Instructions for Continued Airworthiness, or the maintenance manual.

3.17 Aftermarket Maintenance- Refers to the act of inspection, overhaul, repair, preservation and replacement of parts, for the purpose of maintaining the airworthiness of an article or component in compliance with approved technical data.

3.18 General Supplies – Items purchased that do not appear on the Bill of Materials

3.19 Sellable Tooling – Tooling delivered to Moog that will be subsequently sold to customers and not used in the production of parts at Moog

Refer to the Moog supplier portal at <https://www.moog.com/suppliers> for other key Moog terms and definitions, included those listed in the Moog Standard Terms and Conditions of Purchase.

If Moog does not provide a definition for a term in any Moog artefacts or flow-downs, then industry standard definitions (<https://www.sae.org/iaqg/dictionary/>) shall apply.

4.0 ORDER OF PRECEDENCE

The order of precedence for Moog purchases is defined in the Moog Standard Terms and Conditions of Purchase available to view and download at: <https://www.moog.com/suppliers>.

In case of any conflict between this document and the standard terms and conditions of purchase, the standard terms and conditions of purchase shall take precedence. Suppliers should read this document in conjunction with the standard terms and conditions of purchase.

The purchase order is not intended to change design data, i.e., data on drawings, specifications, standards. If a Moog purchase order flow-down contradicts or appears to invalidate design data, the supplier shall contact the Moog Buyer via section A1.4.

A1 QUALITY MANAGEMENT SYSTEM REQUIREMENTS

A1.1 Quality Management System Certification and Approval

The supplier shall:

- a) Establish a documented quality management system (QMS) that addresses Moog and applicable statutory / regulatory requirements.
- b) Work only within the scope of their QMS certification and/or the scope of the approval as communicated by the relevant Moog operating group or business unit.
- c) Maintain a 3rd party / other party QMS approval for the following (as applicable):
 - i) Design / Production – AS/EN/JISQ 9100 or National Aviation Authority Approval Part 21.
 - ii) Maintenance – AS/EN/JISQ 9100 or 9110 or National Aviation Authority Approval Part 145.
 - iii) Stockists and distributors – AS/EN/JISQ 9120, ASA-100, AC00-56.
 - iv) COTS and Sellable Tooling - ISO 9001 or AS/EN/JISQ9100
 - v) Raw material manufacturers – AS/EN/JISQ 9100
 - vi) Inspection, testing, and calibration laboratories – A2LA, NAVLAP, NADCAP, UKAS, NABL, ANSI/NCSL Z540.1, ISO/IEC 17025, ISO 10012, ANAB
 - vii) Special Processors – AS/EN/JISQ 9100 or NADCAP.
- 1) Unless granted a formal waiver by Moog via SN-Type NC, special process providers for all Moog make-to-print orders must be Moog approved in addition to being NADCAP accredited. Specifically, this concerns the following NADCAP categories for Moog orders: Aerospace Quality System (or AS9100), Heat Treat, Welding, Non-Destructive Testing, Surface Enhancement, Chemical Processing, Coatings.
- 2) The following are exceptions to the NADCAP accreditation and Moog approval requirements:
 - i) If the special process is within the NADCAP categories above, but the specification is proprietary to Moog or to the seller and not specifically covered by NADCAP (e.g., EPS11171, Heat Treatment of Magnetic Materials), the processor is required to be NADCAP accredited for the applicable NADCAP category above and Moog will separately verify compliance to any proprietary process specifications.
 - ii) If the special process is outside of the NADCAP categories listed above, the process is not required to be NADCAP accredited.

- iii) If a special process is called out on a drawing, but there is no associated specification with the process (ex. Dry Film Lube), then Moog or NADCAP approval is not required.
- iv) When Moog's customer's specifications are called out on drawings or purchase orders (e.g., BAC specification), the seller shall use processors that are currently approved/certified by the end customer and, in that case, the processor need not also be Moog approved.
- v) When special processing is used for aftermarket maintenance and is directed by the instructions for continued airworthiness.

A1.2 Control of Moog Documents

Moog documents are available to view and download from the Moog global supplier portal at: <https://www.moog.com/suppliers.html>

❖ *Except a) and b) below, this section does not apply to suppliers of COTS or Supplier IP.*

The supplier shall:

- a) Comply with the current revision of Moog documents / specifications referenced on the product definition or Moog purchase order / contract, including Long Term Agreements (LTAs) and Vendor Schedule PO's.
 - i) For all Military, Federal, Industry, Moog, or Moog's customer specifications and standards, unless specified on the contract or purchase order, the supplier may use either the latest specification or the specification in effect at the time of the PO. Raw material is excluded as older versions of raw material specifications are backwards compatible. Moog reserves the right to request a different revision of any specification, which would be specified on the purchase order.
 - ii) Revision or issue number of all applicable Moog specifications shall be verified against the latest [Process Specification Revision Report](#) found at the Moog external website.
- b) Take appropriate action when Moog document changes cannot be implemented prior to the shipment of the product (reference A4.16).
- c) Flow down Moog documents / specification to sub-tier suppliers (when applicable). Suppliers, including dealers and distributors, are responsible for ensuring that the applicable requirements of the purchase order are imposed on lower tier procurements for raw material, components or process services being used in the manufacture of products or services being provided.
- d) Ensure that when Moog documents are translated into a supplier's national language, the translation is performed by a competent translator prior to use.

A1.3 Control of Moog Records

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

Control records related to Moog product in a manner that will allow the recovery of a readable version of any records (including electronic records) by ensuring that:

- a) Records are retrievable upon request within 48hrs and provided to Moog at no extra charge.
- b) Documents / records requiring authorization by and/or submission to Moog shall be written in the English language.
- c) Records created by and/or retained by sub-tier suppliers are appropriately controlled in accordance with these requirements.
- d) Hand-written amendments to records shall be dated and signed in ink with the original information being legible after the change.
- e) Records shall be appropriately identified and managed in accordance with customer, regulatory and company defined requirements.
- f) Storage, usage, and disposal of records is performed in a manner appropriate to their security classification and protected from unauthorized access and fraudulent use.
- g) Storage facilities shall provide environmental conditions to prevent deterioration or damage and to prevent loss.
- h) Retain quality records for a minimum of (15) years from the date of shipment, unless a longer period is specified, and consult with Moog prior to document disposal or record destruction.
- i) Dispose of sensitive information (such as design detail, proprietary info, ITAR restricted info, etc.) by irreversible destruction methods such as shredding, or “erasure”/reformatting for electronic/magnetic media. The nature of the information in the records, as well as its format, dictates the method by which they shall be destroyed.
- j) For aftermarket Aircraft suppliers, traceability records to an airline/operator/certificate holder must be maintained.
- k) For Aftermarket Aircraft suppliers, Life Limited Parts records must accompany every shipment.

A1.4 Communication with Moog

❖ *This section does not apply to Moog Asset Solutions.*

Note: Moog is currently in transition to a new quality software tool. Until a Moog site is transitioned to this new tool, TipQA will be used to communicate with suppliers regarding change management, supplier approval status, supplier performance, management of product non-conformances and corrective actions. Moog Industrial Group suppliers need to contact the Moog buyer for any deviation request. Aircraft Aftermarket suppliers supporting Moog Asset Solutions to request clarifications via USMTeam@moog.com or USMQuality@moog.com

Process standard work and supporting information regarding TipQA usage is available to view and download from the Moog global supplier portal at: <https://www.moog.com/suppliers>. Please contact the Moog buyer or Supplier Quality Engineer (SQE) if you need further information on how to establish and use a TipQA account. Further instructions on the new quality software tool will be distributed as it is rolled out across sites.

The supplier shall:

- a) Establish and maintain a TipQA/Moog quality software tool account and ensure that all individuals needing to communicate with Moog have appropriate level of access and authority to meet these communication requirements.
- b) The TipQA/Moog quality software tool system facilitates two key processes/methods for communicating with Moog regarding supplier-initiated changes and notifications:
 - 1) SN-type NCs/Moog quality software tool equivalent are primarily used to notify Moog of changes and/or request Moog approval for changes. They are also used to notify Moog if/when non-conforming product has been shipped to Moog (e.g., Notice of Escape) and to request requirement clarification and/or requirement concession prior to manufacturing.
 - 2) SR-type NCs/Moog quality software tool equivalent are used for requesting concessions for specific manufactured non-conforming hardware identified prior to shipment to Moog. Each lot of parts shipped will require a SR-Type NC/Moog quality software tool Equivalent to be submitted to Moog.
- c) Submit an SN-Type NC/Moog quality software tool equivalent when notifying Moog of any significant organization changes, key management changes, certification status changes (such as AS9100 or NADCAP certification loss), or other business risks (refer to A3.3).
- d) Submit an SN-Type NC/Moog quality software tool equivalent when notifying and/or requesting Moog approval for work transfers and process changes (A4.13).
- e) Submit an SN-Type NC/Moog quality software tool equivalent when notifying Moog of a product quality escape (A4.15).
- f) Submit an SN-Type NC/Moog quality software tool equivalent when notifying and/or requesting Moog approval/concession for any deviation from requirements (A4.16), including various process restrictions.
- g) Submit an SR-Type NC/Moog quality software tool equivalent when requesting Moog approval for any concession from requirements for manufactured non-conforming hardware (A4.16).

A2 MANAGEMENT RESPONSIBILITY

A2.1 Management Commitment

The supplier shall:

- a) Provide and maintain the resources required to comply with Moog purchase order requirements.
- b) Focus on customer satisfaction with an emphasis on defect prevention, on-time delivery, continuous improvement, and ongoing risk management.
- c) Establish a quality policy and quality objectives for the organization and ensure that quality planning and management reviews effectively consider how the organization is meeting customer requirements.

A2.2 Responsibility, Authority, and Communication

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

- a) Communicate to employees and sub-tier suppliers the impact of their work on product safety and conformity and the importance of ethical behavior.
- b) Communicate to their employees and to their sub-tier suppliers the information that *Products and services provided by Moog are typically used in mission critical applications where supplier product conformity can have an impact on the safety and well-being of people*. This knowledge should be used to help ensure the appropriate level of action and control.
- c) Ensure that within their organization and at subcontractors / sub-tiers, the use of Acceptance Authority Media (AAM) for product release (refer A4.14) is clearly defined within the Quality Management System.
 - i) Suppliers shall maintain compliance to AAM requirements by assessing its process and supply chain as part of its internal audit activities, including but not limited to: application errors, untimely use, misrepresentation, and training deficiencies.
 - ii) The use of AAM must be considered as a personal warranty of compliance and conformity.
 - iii) Suppliers shall, upon Moog request, be able to demonstrate evidence of communication to their employees and their supply chain.
- d) Define the personnel responsible for product quality (across all sites and production shifts) and ensure that they have the following:
 - i) Authority to stop production to correct quality problems.
 - ii) Organizational freedom and access to top management to resolve quality issues.
- e) Establish a procedure, work instruction, or equivalent for task / shift handovers and general role changes that ensures all necessary information is communicated (verbally and in written form) between outgoing and incoming personnel.

A3 RESOURCE MANAGEMENT

A3.1 Training and Competence

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

- a) Establish a documented procedure for identifying training needs, achievement, and review of competence of all personnel performing work directly impacting conformity to product or production process requirements.
- b) Create role profiles / accountabilities and provide on-the-job training for personnel performing work directly impacting conformity to product or production process requirements, including any new or modified jobs, contract, or agency personnel.
- c) Establish a business skills matrix to identify training requirements as well as identify areas for succession planning and risk management / treatment to maintain continuity of supply.
- d) Maintain records of training and competence for the period that the relevant employee remains within the supplier's organization.

A3.2 Vision Standards

❖ *This section does not apply to suppliers of COTS*

❖ *These requirements are applicable to all personnel conducting product verification / inspection that requires unaided visual acuity.*

The supplier shall:

- a) Perform eye tests every 2 years for employees performing inspection activities on Moog hardware. Corrected visual acuity shall be, at a minimum, Snellen 20/40, Jaeger 1 or equivalent with depth perception.
- b) Perform a one-time per person color perception test to ensure that personnel are capable of distinguishing and differentiating colors where color perception is required for product verification / inspection activities.
- c) Ensure that supplier's employees failing eye tests do not perform acceptance of Moog hardware.
- d) Maintain records for vision standards for the period that the relevant employee remains within the supplier's organization.

A3.3 Business Continuity and Risk Management

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

- a) Establish business continuity plans that identify, analyze, evaluate, and/or mitigate risk related to business continuity that includes (but is not limited to) the following:
 - i) Product, facility, or individual skill uniqueness.
 - ii) Access to alternative production facilities.
 - iii) Single points of failure (including sub-tier suppliers) or key process.
 - iv) Remote back-up of computer data, access to information systems.
 - v) Action plans and timescales for business recovery.
 - vi) Contacts, process owners, and procedures to follow in the event of an emergency.
 - vii) A strategy to control, review and communicate plans to all relevant personnel.
- b) Inform their Moog purchasing contact within five (5) working days regarding the following:
 - i) Changes to third party or other party certification status, including lapse, withdrawal, or major audit findings.

- ii) Change of the nominated quality representative or other significant change to top management.
 - iii) Significant change to the quality management system.
 - iv) Change in ownership or discontinuation of business activities.
 - v) Risks that could impact the continuity of the supplier's business / operations.
 - vi) Risks with the supply of substances used in the production or physical make-up of products, due to laws and regulations concerning the control or use of such substances that may be published from time to time.
- c) Submit risk register and contingency plans to Moog upon request.
- d) Notifications shall be submitted to Moog in accordance with the requirements stipulated in A1.4.

A4 OPERATIONAL MANAGEMENT

A4.1 Critical Items, Assurance of Product Safety and Integrity

The supplier shall:

- a) Abide by the following key process restrictions/requirements, which apply unless otherwise directed by the drawing or Moog purchase order:
 1. **Glass Beads** are prohibited from use in processing or manufacturing of parts related to Moog Purchase Orders unless allowed by a specific note on the Moog drawing. Requests for exemption/deviation shall be submitted to Moog for approval (A4.16) for each specific part number. Suppliers using glass beads in their normal processing are required to have an effective method of segregation to prevent contamination of Moog hardware.
 2. **Life-limited items** such as adhesives, compounds, and elastomers shall have 75% or greater storage life remaining upon receipt at Moog. Elastomer's shelf life shall be based on AS5316. The supplier shall identify on the shipped paperwork the manufacturer's name, compound trade name, batch number, cure date, expiry date, specific gravity range, and QPL approval status, as applicable by Moog print for each lot received.
 3. **Electronic Components** (i.e., transistors, integrated circuits, connectors, etc.) ordered to military specifications must have the component manufacturer and lot / date code for each component identified on the shipping paperwork.
 4. **Electrical Discharge Machining (EDM)** is not permitted for manufacture of parts related to all Moog purchase orders unless allowed by specific note on the Moog drawing, or via an explicit written authorization after a formal approval by Moog Engineering. Suppliers performing EDM on Moog parts shall meet the testing and data submission requirements defined in EPS54649 provided by the Moog Buyer. The supplier will create an SN type NC (A4.16) and submit a data card for the part/feature specific process for Moog Engineering approval. The approved data card will then constitute a *frozen process*, and any proposed changes must also be approved formally by Moog. Requests for exemption/deviation of this requirement shall be submitted to Moog via SN type NC for each specific part number/feature.
 5. **Electrostatic Discharge Protection** - Devices designated by the drawing as static sensitive, or otherwise applying static sensitive technology, must be properly handled, packaged, and labeled in conformance with ANSI /ESD S20.20, BS EN 100015-1, or MIL-STD-1686.

- b) Assume full responsibility for conformance of all products shipped to Moog. The acceptance by Moog of supplier product shall not serve as evidence of effective control of quality by the supplier and shall not absolve the supplier of responsibility to furnish acceptable products or preclude subsequent rejection by Moog customers.

A4.2 Counterfeit Parts Prevention

❖ *This section does not apply to OSP suppliers nor to OEM suppliers of castings and forgings.*

The supplier shall:

- a) Establish a program to prevent the delivery of counterfeit parts and materials to Moog. All parts, materials, and assemblies (electrical, mechanical, raw material) included in the hardware delivered to Moog shall be procured directly from the Original Component Manufacturer (OCM) / Original Equipment Manufacturer (OEMs), or from the OCM/OEM authorized distributor. If it is determined in a specific instance that this is not possible, a deviation/concession request (A4.16) shall be submitted to Moog within (5) working days of this determination.
- b) Communicate this requirement to subcontractors / sub-tier suppliers and assure their compliance to it.

Further guidance on counterfeit parts avoidance can be found in SAE documents AS5553 (Electronics) and AS6174 (Material).

A4.3 Contract Review

The supplier shall:

- a) Conduct contract and purchase order reviews for **all** purchase orders by personnel having relevant knowledge and experience.
- b) Ensure the production, inspection, test capability, capacity, and resources are available to meet all Moog requirements.
- c) Review and comply with the requirements of drawings, specifications, SQR-1, supplementary quality clauses, packaging requirements, standard terms and conditions, and all other flow-downs referenced on the Moog purchase order.
- d) Retain documented information on the result of the reviews and notify the Moog purchasing contact of any instances where Moog requirements cannot be met prior to production.
- e) Follow a formal documented method to ensure they are working to the latest version of all requirements to remain in compliance when working to a Vendor Schedule PO as indicated on the Moog PO.
- f) Submit all requests for clarification, waiver, or change of any Moog requirement via a TipQA/Moog quality software tool SN type NC (A4.16) (Industrial Group Suppliers to contact Moog buyer). The supplier shall not commence manufacturing of parts for Moog orders until the NC (or equivalent) is closed and the supplier has received a response from Moog.
- g) Not accept any purchase order or produce parts based on “red-line” drawings or any other instructions unless documented as such on the Moog purchase order with clear

instructions to the supplier. If any questions remain or any clarifications are required, contact the Moog buyer for clarification prior to commencement of any work via SN-NC (A4.16). Suppliers who use Moog models to produce CAM programs must ensure those programs produce parts that are compliant to the Moog drawing as the ultimate requirement.

A4.4 Purchasing / Sub-Contracting

❖ *This section does not apply to suppliers of COTS or Supplier IP*

The supplier shall:

- a) Only purchase from / subcontract to a Moog approved source, unless purchasing the following:
 - i. Conventional machining operations (excluding final product verification or release).
 - ii. Castings or forgings.
 - iii. Conventional rough machining on castings and forgings.
 - iv. Raw material from a material stockist or distributor.
 - v. Moog's Customer specified special processing (A1.1 NOTE 3, also see b) below).
 - vi. Products or services from a Moog end-customer directed source, in which case the supplier shall only purchase from the customer's directed source.
- b) Traceability to the raw material manufacturer is required. Suppliers procuring raw material to manufacture hardware for Moog shall comply with S275 when applied to the PO. For simplified compliance, raw material may be purchased pre-inspected to S275 from a Moog approved raw material supplier listed at:
<http://www.moog.com/suppliers/arms>.
- c) Only purchase from a Moog or end-customer approved source for **special processing**
 - i) Moog approved special process suppliers (<https://www.moog.com/suppliers/asps>) shall be used on parts related to all Moog purchase orders where Moog defines the processing requirements, unless the supplier is themselves approved for the process specification by Moog or is otherwise directed by a Moog supplemental quality requirement.
 - ii) Suppliers shall establish and follow a formal documented process to verify prior to internally processing the parts or at time of PO placement to a sub-tier, that either they or their chosen sub-tier are an approved processor for the Moog or end customer specification. When requested by Moog, suppliers must be able to furnish objective evidence (e.g., internal production records, certifications from sub-tiers) that the process has been followed, and that parts have been processed by approved suppliers according to defined process specifications.
 - iii) The use of a Moog or end-customer approved sub-tier does not relieve the supplier from responsibility to manage the quality of the sub-tier supplier. The Supplier owns the PO to the sub-tier, so it is the supplier's responsibility to manage the sub-tier.

- iv) The following are considered special processing, as a minimum: heat treatment, plating operations, chemical processing, chemical cleaning, nondestructive testing, welding/brazing, shot peening, Ion Vapor Deposition (IVD), High Velocity Oxygen Fuel (HVOF), other specialty coatings.
- v) The following are exemptions to Moog special processing approvals:
 - 1. Suppliers need not be Moog approved for in-process stress relief when parts are subsequently heat treated to a final condition. The supplier must adequately control pyrometry and select temperatures and cycle durations that will not be detrimental to fit, form, or function.
 - 2. Suppliers of nameplates using photosensitized aluminum material are deemed compliant with MIL-PRF-8625 Anodic Coatings for Aluminum and Aluminum Alloys and are therefore exempt from the requirement to use a Moog approved processor to comply with this specification.
 - 3. Suppliers of nameplates that perform only the sealing process portion of MIL-PRF-8625 are not required to be Moog or NADCAP approved for the sealing process.
 - 4. Suppliers performing touch-up Chemical Conversion Coating using an Applicator Pen listed on QPL-81706 for mechanically damaged areas per MIL-DTL-5541. Suppliers must have a robust plan to apply coating, maintain pen cleanliness, and eliminate cross contamination.
 - 5. Suppliers delivering sellable tooling or other production support items for distribution by Moog.
- d) Ensure that all purchasing information / documentation:
 - i) Accurately specifies the supplier's requirements and Moog's requirements, including the requirements of this document, and is flowed down to subcontractors / sub-tier suppliers.
 - ii) Specifies the supporting documentation to be provided with the purchased product on receipt that states the product meets specified purchase requirements.
- e) Ensure that final product verification of contracted parts before shipment to Moog is not delegated to sub-tiers unless formally approved by a Moog quality representative (refer A4.16).
- f) Maintain records of purchasing / subcontracting per the requirements of A1.3.
- g) Any Laboratory (third party) that performs confirmatory testing to verify conformance to applicable specifications shall be either a Moog approved or a NADCAP, UKAS, A2LA, NAVLAP or NABL accredited certified testing supplier.
- h) Only purchase from the named source on source-controlled drawings.
- i) Aftermarket maintenance suppliers are to follow approved technical data and other regulatory requirements, as applicable.

A4.5 Receipt Inspection / Verification of Purchased Product

The supplier shall:

- a) Have a sub-tier supplier verification process to verify that purchased product and/or service meets the supplier's requirements, which shall include Moog's requirements. This process may include minimum maturity level methods of receiving inspection but higher maturity methods such as PPAP are preferred.

- b) Ensure that required documentation has been provided with the purchased product and/or service that states the product meets specified purchase requirements (refer A4.14).
- c) Maintain records of sub-tier verification process and supporting documentation per the requirements of A1.3.

A4.6 Subcontractor / Sub-tier Supplier Monitoring

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

- a) Monitor subcontractor and sub-tier supplier performance through the following indicators:
 - i) Delivered product quality.
 - ii) Customer disruptions and customer returns.
 - iii) Delivery schedule performance.
- b) Conduct load and capacity reviews with key subcontractors and sub-tier suppliers annually or following significant load increases.
- c) Take appropriate corrective action with poorly performing subcontractors / sub-tier suppliers.
- d) Maintain records of subcontractor / sub-tier supplier monitoring per the requirements of A1.3.

A4.7 Manufacturing Process Control

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

- a) Maintain a traveler, router, process flow sheet, or equivalent control mechanism that directs procedures for the control of quality and configuration through all stages of production.
- b) Develop inspection procedures and control plans and maintain records that include evidence of inspection for all features (e.g. first article inspection, acceptance test data) of products and processes supplied to Moog. These inspection procedures shall show the product has been inspected and/or tested during all stages of manufacturing, identify the name of the individual (i.e. with Acceptance Authority Media) who certified the results, and, where applicable, include the results of the inspections and tests.
- c) Ensure that 100% of all features on all parts produced are in accordance with Moog requirements. This shall be accomplished by the following minimum requirements:
 - i) Understand and reduce variation within processes by using SPC and control-charting techniques and/or appropriate inspection. Suppliers using sample (incl. Moog approved) inspection plans remain responsible for all attributes on the part/assembly.
 - ii) Process stability and capability shall be demonstrated before moving to reduced sampling frequencies in accordance with AS13002 or AS9138.
 - iii) In-process inspection shall occur throughout processing of a manufacturing lot.
 - iv) The method of inspection shall be suitable and capable for each type of feature or inspection being performed. For example, measurement instruments should have 10 times the resolution of the tolerance being measured.
 - v) When automated inspection equipment, (i.e., CMM, etc.) is utilized, inspection programs shall be controlled, validated, and protected from unintended alteration.

- vi) Parts shall be 100% visually inspected for loose or hanging burrs, machining chips, handling damage, and FOD (Foreign Object debris) prior to shipment.
 - vii) Suppliers shall buy thread/spline gauges from commercial manufacturers (commensurate to the tolerance of the part) and shall not use internally manufactured gauges.
 - viii) Aftermarket maintenance suppliers shall perform all required inspections and tests as specified and directed by the approved technical data acceptable to the appropriate National Aviation Authority.
- d) Ensure that calibration of measuring and test equipment used for product acceptance is performed and is traceable to established international or national measurement standards (e.g., BSI, NIST, UKAS, etc.). Procedures for periodic calibration, certification, maintenance of tools and equipment, and an action plan, should measuring and/or test equipment be found to be out of calibration shall be established and followed. The action plan shall contain, as a minimum, item identification (model, manufacturer, and serial number), found condition (including span/range and accuracy), date condition found, date of previous calibration, notification details, and any other pertinent measurement details.
- e) Ensure that parts subjected to machining, special processes, and selected other build-to-print parts meet the workmanship standards and requirements defined by Moog.
- i) In general, parts shall have a consistent appearance with respect to color, texture, machine marks, etc. unless allowed by the drawing, specification and/or workmanship/visual standard. Parts shall also be free of random marks, blemishes, or touch-ups unless allowed by the specification, drawing, workmanship/visual standard.
 - ii) Questions regarding specific appearance concerns should be submitted to the Moog buyer (A4.16) via an SN-type NC/Moog quality software tool equivalent (before manufacture) or an SR-Type NC/Moog quality software tool Equivalent/Moog quality software tool equivalent (post manufacture) with the appropriate detail (problem description, pictures, cause, recommended actions, etc.). Industrial Group Suppliers to contact Moog buyer directly.
- f) Establish a visual management process / system that will provide feedback to everyone involved in the process regarding status, the flow of work, priority, and the performance of the process, facilitating timely problem diagnosis and effective intervention.

A4.8 Control of Reworked Product

The supplier shall:

- a) Only rework product in accordance with controls specified within the process specifications, on the product definition, or to an agreed rework procedure authorized by Moog.
 - i) For Moog designed hardware when Moog changes P/Ns, dash numbers, or P/N revisions AND there is work in process (WIP) for a given contract, the rework instructions must be submitted in writing (Via SN NC) to the Moog purchasing contact to obtain Moog Engineering approval prior to rework.
- b) Ensure that instructions for rework, including reverification / inspection requirements are accessible to and utilized by the appropriate personnel.
- c) Maintain records of reworked product per the requirements of A1.3.

A4.9 Foreign Object Debris

❖ *This section does not apply to suppliers of COTS, castings, forgings, or raw material*

The supplier shall:

- a) Maintain a Foreign Object debris/Damage (FOd/FOD) control program in accordance with the requirements of AS9146. Aftermarket maintenance providers are to comply with applicable regulatory requirements as directed by the appropriate National Aviation Authority.
- b) Use appropriate tools/techniques to manage part-level FOD risk throughout the manufacturing process, documenting risks, and associated mitigation actions in a part-level risk register, PFMEA or Control Plan.
- c) Ensure that all incidents of actual or potential FOD are reported, investigated, and corrected.
- d) Moog reserves the right to require use of PFMEA and Control Plans to identify and mitigate FOD risk. Moog also reserves the right to require suppliers to undertake appropriate containment actions pending implementation of robust preventative and control actions.

A4.10 Storage, Identification, and Traceability

The supplier shall:

- a) Provide secure storage facilities for product, equipment, tools, and materials.
- b) Ensure the conditions of storage prevent deterioration and damage of stored items. Assess the condition of product in stock at appropriate planned intervals to detect deterioration.
- c) Ensure that individual articles, materials, and lots are always identified and segregated from all other articles, materials, and lots. Ensure segregation of serviceable product, equipment, tools and material from unserviceable product, equipment, tools, and material.
- d) Records for articles shall indicate the part number, revision level, lot number, and if applicable, the serial number and associated detailed information.
- e) Records for materials, as applicable, shall indicate type, applicable serial numbers, manufacturing lot numbers, heat numbers, batch numbers, date codes, cure dates, etc.
- f) Materials or articles furnished by Moog for outside operations must remain identifiable by the Moog supplied lot, batch, or serial number. This number must be recorded on all applicable supplier paperwork such as certificates of conformance and as built records. In cases where multiple lots of Moog supplied components are utilized, the assembly level must be segregated by those lot numbers to maintain distinct traceability. In cases where supplier documents cannot accommodate the listing of Moog supplied material, a separate listing with those details is acceptable.
- g) Records for aircraft used serviceable material should contain appropriate traceability, non-incident statements, certifications, and life limit/back to birth information.

A4.11 Preventive Maintenance

- ❖ *This section does not apply to suppliers of COTS*
- ❖ *This section does not refer to articles maintained by maintenance repair organizations*

The supplier shall:

- a) Identify key process equipment and provide resources for machine / equipment maintenance and develop an effective planned total preventative maintenance system that includes the following:
 - i) Planned maintenance activities
 - ii) Packaging and preservation of equipment, tooling, and gauging
 - iii) Availability of replacement parts for key production equipment
 - iv) Documenting, evaluating, and improving maintenance objectives
 - v) Identification and control of all safety-critical plant and equipment
 - vi) Loss to available capacity related to planned maintenance activities

A4.12 Part Preservation, Packaging, and Delivery**The supplier shall:**

- a) Comply with the freight, preservation, and packaging guidelines stipulated by Operating Group and/or Region at the Moog global supplier portal at <https://www.moog.com/suppliers>.
- b) Ensure that the packaging and preservation is adequate to protect the products during transportation, handling, and storage (ATA Specification 300 as applicable). In general, packaging containers shall be appropriate for the size, weight, and fragility of the products being packed, and shall ensure there is no metal-to-metal or part to part contact of finished features.
- c) Ensure that preservation methods (e.g., oils) will allow storage without degradation or corrosion for a minimum of 12 months from the date of receipt. Ensure any preservation material will not leak or leach out of the container during shipment or storage.
- d) Not use preservatives that congeal over time and/or are difficult to clean.
- e) Use part separation dividers or unitized packing to prevent part-to-part contact or packaging damage.
- f) Ensure that different manufacturing lots of the same part number are not mixed within a package. Each manufacturing lot shall be clearly identified and segregated in separate packages.
- g) Ensure that packaging labels contain the following information: date of shipment, purchase order number, part number, serial number (if applicable), and quantity in both numerical and barcode format. The preferred format is 2D barcode; however, 3 of 9 format is acceptable.
- h) Label fragile packages as such.
- i) Clearly mark the shelf life/expiration date on the packaging and the shipping paperwork for material with shelf-life requirements.
- j) Ensure that all chemicals are accompanied by a relevant Safety Data Sheet (SDS) with each shipment.
- k) Clearly label each inner container with the lot information when combining individual lot packages into a single outer container. If this combination is done, then lots must be individually listed on a shipping list as separate items.

A4.13 Control of Work Transfers & Process Changes

- ❖ *Control of Work Transfers & Process Changes is not applicable to COTS or Raw Material purchased from a stockiest or distributor*
- ❖ *Control of Work Transfers & Process Changes is applicable to suppliers planning the temporary or permanent transfer of work or change to the manufacturing or aircraft maintenance process and is used to control and verify that the product conforms to requirements during and after the following types of transfers/changes:*
 - *From the supplier's facility to another facility.*
 - *Outsourcing from or insourcing to the supplier's facility.*
 - *From one subcontractor / sub-tier supplier to another subcontractor / sub-tier supplier.*
 - *Examples of sub-tier supplier changes that require notification to Moog include: changing supplier of castings/forgings, changing supplier of special processes defined by Moog or Moog's end customer, changing supplier of make-to-print sub-components that impact form, fit, function of the assembled unit, or changing supplier that could negatively impact delivery or cause capacity constraints.*
 - *Within the supplier's facility that could influence the continuity of supply of product.*
 - *Any change in the product design that could impact critical items*
 - *Any Major change associated to the manufacturing process (refer to SN-Notification Instructions for Major Process Change definition/clarification)*

The supplier shall:

- a) Establish a documented procedure for the control of work transfers & process changes to plan, control and verify the conformity to specified requirements before, during, and after the change. The procedure shall contain (but not be limited to):
 - i) Formal notification to Moog before any change commences.
 - ii) Risk assessment and mitigation.
 - iii) Transfer /change plan.
 - iv) Demonstration of capacity and process capability at the new area to protect customer delivery and quality.
 - v) Demonstration that generation of buffer stocks are built into load and capacity plans to protect customer delivery.
 - b) Complete and submit the necessary forms and qualifying information, including First Article Inspection Report (FAIR) to their Moog purchasing contact.
 - c) Proceed with the work transfer or process change only when a response has been received from their Moog purchasing contact and compliance with the stipulated requirements has been achieved.
 - d) Ensure that delivery performance is protected prior to any work transfer or process change.
 - e) Maintain records of work transfers and process changes per the requirements of A1.3.
 - f) Submit notification to Moog in accordance with the requirements stipulated in A1.4.
- Supplier shall not make any change in materials or design details that would affect the goods or any component parts thereof regarding 1) part number identification, 2) physical or functional interchangeability, or 3) repair and overhaul procedures and processes and material changes that affect these procedures without written approval of Moog buyer. If such approval is granted, all part numbers and the originals of all drawings and data shall be revised accordingly.

A4.14 Release of Products and Services

Note: Release documentation may include the following:

- Certificate of Compliance (CofC).
- First Article Inspection Report (FAIR).
- Production Part Approval Process (PPAP) documentation (when imposed by the Moog purchase order).
- Airworthiness Release Certificate

The supplier shall:

- a) Provide separate release documentation with each delivery to Moog.
- b) Ensure that release documentation meets the following:
 - i) Is written in the English language.
 - ii) Refers to a single purchase order / delivery.
 - iii) Is legible and protected from damage / deterioration.
 - iv) Is attached to the outside of secondary packaging (where appropriate)
- c) The CofC submitted to Moog shall contain the following information as a minimum:
 - i) Unique traceable document number
 - ii) Moog part number and drawing revision
 - iii) Military, Federal or Industry specification number and revision
 - iv) Purchase Order number and line item
 - v) Quantity of product
 - vi) Serial numbers (if applicable)
 - vii) work order number (if applicable)
 - viii) date shipped
 - ix) supplier name
 - x) supplier address
 - xi) authorized acceptance authority stamp or signature
 - xii) compliance statement
 - i) The CofC shall also include confirmation of compliance to all PO requirements including drawings, specifications, SQR-1, and all supplementary clauses.
 - ii) For parts returned by Moog to the supplier, the CofC for the reshipment must contain the debit memo number, a summary of work performed, or statement that the part was replaced.
- d) Provide additional release documentation (when applicable)
 - i) First Articles and First Article Inspection Reports (FAI, FAIR).
 1. First Articles and First Article Inspection Reports (AS9102) are required when supplementary quality clause S292 is applied to the Moog Purchase Order.
 - ii. Production Part Approval Process documentation (required when supplementary clause S580 is applied to the Moog Purchase Order.
 - iii. Deviation permit number (Ex. SN-Type NC, Notification Number)
 - iv. Concession permit number (Ex. SR-Type NC, Notification Number)
 - v. Raw Material traceability certifications, testing and inspection results.
 - The following requirements apply to suppliers of raw material or Moog build to print products:
 1. Suppliers of raw material must comply with supplementary quality clause S275 when applied to the PO. See S275 at <http://www.moog.com/suppliers/ssqr> for more information. Hand

forgings (or open-die forgings) are considered raw material and suppliers are therefore also subject to the requirements defined in S275.

2. Suppliers of Moog build-to-print products, excluding castings and forgings, must comply with S275 when applied to the PO. For such suppliers, compliance to S275 requires completion of the prescribed raw material inspections but does not require submission of the checklist with shipments to Moog. Third party lab tests may be required for some materials.
3. For simplified compliance, material may be purchased pre-inspected to S275 from a Moog-approved raw material supplier, found at <http://www.moog.com/suppliers/arms>.
- vi) In addition, when requested, the supplier shall furnish information on source(s) of supply that could include serial numbers, lot numbers, heat numbers, batch numbers, date codes, cure dates, and Qualified Products List approval status as applicable.
- e) Maintain records of release documentation per the requirements of A1.3.

A4.15 Control of Non-Conforming Product

The supplier shall:

- a) Establish a method of detection and feedback of product nonconformances and process noncompliance.
- b) Contain nonconformances by segregating (or identifying and controlling) the product or process to prevent unintended use or delivery. Only product that conforms to specified requirements shall be shipped to Moog unless approved by Moog per A4.16.
- c) Submit any nonconformances with dispositions of Use-As-Is or Repair, for products under Moog design control, for written authorization prior to shipment (A4.16). Moog does not grant Material Review Board (MRB) Authority to suppliers, unless otherwise documented.
- d) Re-inspect or retest any reworked parts prior to shipment to Moog.
- e) Take necessary actions (within 48 hours) to contain the effect of the nonconformance on other process or products, i.e. work-in-progress, stores stock, shipping areas, in transit, sub-tier / subcontract activities, similar products, products already dispatched and delivered to Moog.
- f) Immediately notify their Moog purchasing contact and their Moog quality representative of any delivered nonconforming product, and pursue an acknowledgement from Moog that the notification has been received.
 - i) Notifications shall be submitted to Moog in accordance with the requirements stipulated in A1.4. Suppliers are required to notify Moog within 24 hours of discovering any nonconformance that exists or is suspected of existing on hardware that has previously been shipped to Moog. This notification shall include the following information at a minimum:
 - 1) Affected Part number(s), process/processes, and name(s).
 - 2) Description of the nonconforming condition and the affected requirement.
 - 3) Quantities, dates, purchase orders, and destination of delivered shipments.
 - 4) Lots, batch numbers, serial numbers, or date codes as applicable of the affected lot.
- g) Stop shipment of product when notified of nonconformance by Moog until appropriate containment and corrective action has been completed (A5.3).

- h) Clearly and permanently mark (or establish alternative controls to prevent use) product dispositioned for scrap until physically rendered unusable.
- i) Take appropriate corrective action (A5.3).
- j) Maintain records related to the control of non-conforming product per the requirements of A1.3.

A4.16 Deviations and Concessions

Note: Moog Asset Solution suppliers to contact Moog via USMTeam@moog.com or USMQuality@moog.com

The supplier shall:

- a) Ensure that written authorization via an approved SN or SR-Type NC, Moog quality software tool Equivalents, or Moog Industrial suppliers communication with the Moog buyer has been granted by Moog prior to the shipment of product which does not conform to specified requirements.
 - i) Requests for deviation or concession should be submitted to Moog in accordance with the requirements stipulated in A1.4. (Depending on the status of Moog's software transition, Moog may direct the usage of an alternate software tool. In those cases, written direction will be given).
 - a. SN-type NCs/Moog quality software tool equivalent are used to request deviations from requirements and should be generated and submitted to Moog during contract review and prior to acceptance of the purchase order and manufacture of parts (refer A4.3). SNs may also be used for clarification of the applicability or relevance of general and quality system requirements even if parts are already manufactured.
 - b. SR-Type NC/Moog quality software tool Equivalents/Moog quality software tool equivalent are used for requesting concessions for non-conforming hardware. SR-Type NC/Moog quality software tool Equivalent/Moog quality software tool Equivalents are required for all/any non-conforming parts, including parts that may already have a Moog approved SN-Type NC/Moog quality software tool Equivalent. As a rule, suppliers may not ship nonconforming product to Moog without an approved SR-Type NC/Moog quality software tool Equivalent/Moog quality software tool Equivalent. The single exception to this rule is an open SR-Type NC/Moog quality software tool Equivalent/Moog quality software tool Equivalent with disposition "MRB HOLD". Suppliers may ship product to Moog on an open SR-Type NC/Moog quality software tool Equivalent/Moog quality software tool Equivalent with disposition "MRB HOLD" only when authorized in writing by the Moog buyer.
 - c. Aircraft Group Moog Asset Solution supplier are required to contact Moog buyer in lieu of SN-type NC.
- b) Ensure the quantity of parts on an SR-Type NC/Moog quality software tool equivalent submitted for approval matches the quantity of parts on the purchase order.

- c) Ensure the concession permit number (SR-Type NC/Moog quality software tool Equivalent) is included in the release documentation submitted with product shipment(s) to Moog (A4.14). This must be clearly listed on one or more of the following items: the packing slip, or Certification of Conformance, or include a copy of Moog approved SR in with paperwork, and FAIR if applicable.
- d) Ensure that nonconforming product shipped to Moog is clearly identified as non-conforming product and packaged separately from the acceptable product.
- e) Take appropriate corrective action (A5.3).
- f) Maintain records of deviation permits / concessions per the requirements of A1.3.

A5 MEASUREMENT, ANALYSIS, & IMPROVEMENT

A5.1 Quality and Delivery Performance

The supplier shall:

- a) Monitor quality and delivery performance using key performance indicators and ensure that quality and delivery performance targets are achieved.
- b) Utilize the Moog scorecard, when provided by Moog, as a key performance indicator.
- c) Take appropriate corrective action (A5.3) when quality or delivery performance is not or will not be achieved.
- d) Inform the Moog purchasing contact immediately when delivery schedules are not or will not be achieved and submit a recovery plan (within 24hrs) to the Moog purchasing contact.
- e) Use a cross-functional team to develop a continual improvement policy and plans to meet Moog performance expectations.
 - i) Moog performance requirements may be continually refined relative to evolving industry and customer expectations. Moog will apply supplier maturity assessment and supplier development tools such as IAQG [SSCA](#) as necessary to develop, recover and improve performance to meet expectations.
- f) Monitor the implementation of improvement plans and evaluate the effectiveness of results.

A5.2 Audit Process

❖ *This section does not apply to suppliers of COTS*

The supplier shall:

- a) Establish an audit program that includes internal production and subcontractor services to verify compliance to planned arrangements related to Moog contracts. The audit program shall be prioritized based on product and process risk.
- b) Audit products at appropriate stages of production using a product that has been selected at random from the current production process to determine the following:
 - i) Production method provides a record to demonstrate that all operations are complete.
 - ii) Verification / inspection records demonstrate that all operations are appropriately verified.
 - iii) Dimensional acceptability to product definition.
 - iv) Visual acceptability to product definition.
 - v) Functional performance test to product definition (where applicable).
- c) Audit each manufacturing process to determine if the resource and controls used to transform inputs into outputs are effective and comply with requirements.

- d) Have internal auditors who are appropriately trained and competent (A3.1) to perform audits.
- e) Establish specific checklists to be used for each audit.
- f) Increase audit frequencies when internal / external nonconformances or customer (Moog) complaints occur.
- g) Take immediate action when an audit result identifies a product nonconformance (A5.3).
- h) Take appropriate corrective action (A5.3) within 90 days or prior to shipment of product to Moog.
- i) Maintain records of internal audits per the requirements of A1.3.

A5.3 Corrective Action

The supplier shall:

- a) Perform structured problem-solving activities to establish the root cause(s) of nonconformances.
- b) Take appropriate corrective action(s) to eliminate the cause of nonconformances and prevent recurrence.
- c) Verify that a permanent fix has prevented any further nonconformances.
- d) Flow down corrective action requirements to subcontractors / sub-tier suppliers (when applicable).
- e) Take corrective action whenever a concession request has been submitted to Moog (SR-Type NC/Moog quality software tool Equivalent. Moog Asset Solution suppliers and Moog Industrial suppliers to contact buyer).
- f) Take corrective action whenever a Discrepancy has been identified to the supplier by Moog via Supplier Discrepancy Notice (SDN) or e-mail (Moog Industrial Suppliers).
- g) Take and submit details of corrective actions whenever a formal corrective action response is requested by Moog (Moog Asset Solution and Moog Industrial suppliers to contact buyer).
 - i) Requests for formal corrective actions (RC, SA, SU, and SC types) are issued by Moog from the TipQA/Moog quality software tool system (refer A1.4). Suppliers should submit their corrective action response via TipQA/Moog quality software tool.
 - ii) Suppliers must respond promptly and effectively to corrective actions issued by Moog. Expectations and best practices for CA responses are available [here](#) and at the Moog supplier portal <https://www.moog.com/suppliers>. When issued a Major corrective action request, the supplier shall conduct root cause investigation, problem solving and corrective/preventive action management using a formal 8D ([AS13000](#)) or 9S ([ARP9136](#)) problem solving approach. Suppliers shall submit their responses and supporting artifacts through the TipQA/Moog quality software tool system using their own 8D/9S format or the Moog format available via Moog SQE.
 - iii) CA responses must address the following robustly:
 - 1) **Containment** (within 48hrs) – action to contain the problem and prevent further escapes. Perform initial ‘look across’.
 - 2) **Root cause (process)** (target: 15-30 days)– define why the escape happened (drill down to process failure).
 - 3) **Root cause (detection)** (target: 15-30 days)– define why the problem escaped detection.
 - 4) **Corrective action** (target: within 45 days) – immediate actions taken or planned to correct the root cause(s) of the specific escape.

- 5) **Preventative action** (target within 60 days)– actions taken or planned to prevent problem reoccurrence at the systemic level. Perform a ‘look across’ to other similar parts or processes.
- h) Review & update the Process Failure Mode and Effects Analysis (PFMEA) and Control Plan (or equivalent risk management tools) whenever the corrective action has been identified.
 - i) Repeated failure to promptly and effectively contain non-conformances and address underlying root-causes may result in escalation, including but not limited to:
 - 1) Moog or 3rd party source inspection and audits of supplier’s products and processes. These will be done at supplier’s expense.
 - 2) Participation by the supplier in Moog’s supplier improvement and recovery processes.
 - 3) Suspension, disapproval, and removal from the Moog Approved Suppliers List (ASL).
- i) Maintain records of corrective actions per the requirements of A1.3.

APPENDIX A – REFERENCES

The following international standards are important references for the structure and content of the requirements stipulated in this document.

- ❖ BS/EN/ISO 9001:2015 (Quality Management System Requirements)
- ❖ AS/EN/JISQ 9100:2016 (QMS Requirements for Aviation, Space and Defense Organizations)
- ❖ AS/EN/SJAC 9110:2016 (QMS Requirements for Aviation Maintenance Organizations)
- ❖ AS/EN/JISQ 9120:2016 (QMS Requirements for Aviation, Space and Defense Distributors)
- ❖ AS/EN/SJAC 9145:2016 (Requirements for APQP and Production Part Approval Process)
- ❖ AS/EN/SJAC 9146:2017 (Foreign Object Damage (FOD) Prevention Program)
- ❖ AS/EN/SJAC 9102 (Aerospace First Article Inspection Requirements)
- ❖ AS/EN/SJAC 9138 (Quality Management Systems Statistical Product Acceptance Requirements)
- ❖ AS13000 (Problem Solving Requirements for Suppliers)
- ❖ AS13002 (Requirements for Developing and Qualifying Alternate Inspection Frequency Plans)
- ❖ AS13003 (Measurement Systems Analysis Requirements for the Aero Engine Supply Chain)
- ❖ AS13004 (Process Failure Mode and Effects Analysis (PFMEA) and Control Plan)
- ❖ AS13006 (Process Control Methods)
- ❖ ARP9136 (Root Cause Analysis and Problem Solving (9S Methodology))
- ❖ AS5316 (Storage of Elastomer Seals and Seal Assemblies)
- ❖ ANSI /ESD S20.20 (Protection of Electrical and Electronic Parts, Assemblies and Equipment)
- ❖ BS EN 100015-1 (Protection of electrostatic sensitive devices)
- ❖ MIL-STD-1686 (Electrostatic Discharge Control Program for Protection of Electrical ...)
- ❖ ANSI /ESD S20.20 (Protection of Electrical and Electronic Parts, Assemblies and Equipment)
- ❖ ASA-100 (Aviation Suppliers Association Quality System Standard)
- ❖ AC 00-56B (Advisory Circular Voluntary Industry Distributor Accreditation Program)
- ❖ AS9131 (Nonconformance Data Definition and Documentation)
- ❖ AS6116 (Notification of change (NOC) Requirements)

To access these standards:

<https://www.iso.org/standards.html>

<https://www.ansi.org>

<https://www.bsigroup.com>

<http://quicksearch.dla.mil>

<https://www.sae.org/standards/>

<https://www.sae.org/iaqg/publications/standards.htm>

<https://aesq.sae-itc.com/content/aesq-standards>

https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_00-56B.pdf

<https://www.aviationsuppliers.org/ASA-100>

Change History

Revision	Date	Description of Changes	MOOG Approvals
1.1	June 2021	Key changes include: - Requirement to use Moog approved or 3rd party accredited labs (A1.1, A4.4) - Added note on chemical conversion coat touch-up (A1.1) using applicator pen - SRs to be submitted per delivery (A1.4) - EDM invoke new EPS54649 (A4.1) - Hierarchy of drawing requirements over engineering models (A4.3) - Requirement to use named sources only for source-controlled parts (A4.4) - Confirming MRQ52620 applicability to OSP providers (AG, A4.7) Requirement for 8D/9S format for Major corrective actions (AG, A5.3)	Will Brady (Aircraft) Mike Wawrowski (Industrial)
1.2	August 2021	Key changes include: - New cover page. - Reversal of SR change (per delivery) implemented in revision 1.1. (A1.4) - Clarification that PO quantity and SR quantity must match (A4.16). - Exemption from requirement to use Moog/NADCAP approved sources when only performing sealing portion of MIL-PRF-8625. (A4.4)	Will Brady (Aircraft) Mike Wawrowski (Industrial)
1.3		Key Changes Include: - Reorganization of Requirements - Removal of Modified COTS - Inclusion of Indirect procurement when required by contract - Addition of Aircraft Aftermarket Specific Requirements - Clarification of NADCAP requirements and Moog approval of Special Processors	Kurt Zimmerman (Aircraft) Mike Wawrowski (Industrial)

Document Update Policy

This document may be updated periodically. Major amendments will be shown as an update from one revision number to a higher revision number (e.g. revision 1.0 to revision 2.0). A minor amendment will be shown as a number change after the decimal point (e.g. revision 1.0 to revision 1.1). The content of the higher revision is regarded as the latest requirements.