

**Collins Aerospace
Interiors – Evacuation Systems
(DBA as Goodrich)**

A-9000

SUPPLIER QUALITY REQUIREMENTS

Revision M

**Collins Internal Document #
INPX-SCM-0001-SQR [M]**

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REVISION HISTORY

Rev.	Description	Date
Orig.	Original Issue	November 1998
A	Completely rewritten	August 1999
B	Add requirements for <i>Goodrich Aircraft Evacuation Systems Division</i>	October 1999
C	Revised to adopt document for exclusive use by Goodrich AIP-PHX mfg facility	January 2003
D	Revised to modify Shelf Life/Age Control document reference and combine the specific requirements of the A9000 AIP Supplement into this document	February 2004
E	Add to Section 22, AS-9102 FAIR requirement and modify acceptance status marking requirement via removal of use of “DS” and “FAS” GR stamp for Delegated Source Inspection Approved suppliers. Add ISO 9001:2000 rqmt for Delegated Suppliers. Add Section 23 to address testing requirements for India slide/raft manufacturers.	April 2005
F	Changed company name from Aircraft Interior Products to Goodrich Interiors Phoenix (Evacuation Systems Products). Reduced fabric sampling plan for Section 13. Eliminated redundant requirements that are specified in ISO 9001 Quality Management Standard. Incorporated the reference and Goodrich Corporation of the GR-9100 Supplier Quality Requirements. Added new section for tooling, templates, fixtures and jig – Section 4.32. New Nadcap requirement for suppliers and subtier suppliers added. Section for Nonconforming enhanced to add request for waivers and deviations. Text changes are highlighted in yellow.	March 2012
G	Revised document to replace Goodrich with UTAS where applicable. Added references to ASQR-01 UTC Aerospace Supplier Quality Requirements. Added 4.32 for Obsolescence Management requirements/notification.	March 2013
H	Corrected typographical and formatting errors. Added clarifications to FAI form requirements. Added Section 4.33 for Boeing shipping documentation requirements.	March 2013
J	Added Airbus GRESS Requirements flowdown requirements, added section for risk management, enhanced requirements for statistical product acceptance, added mistake proofing levels to corrective action section, Added DOM to section 4.3.7.	September 2013
K	Removed Phoenix specific Interiors Evacuation Systems address. Removed references to UTC ASQR-01 Supplier Requirements. Removed Delegated Source Inspection Section (4.27), renumbered A-9000 sections. Updated references from Goodrich to UTAS Forms in Section 1.. Removed section of Management Responsibility. Added Section 4.8 for Source Inspection, Section 4.13.5 for Boeing FAA-PMA marking restriction. Refer to sections highlighted in yellow for changes. Text changes are highlighted in yellow.	April 2018
L	Removed 2 sections: Resource Management and Right of Access, that are covered by either ASQR-01 or UTAS-SCM-PRO-0003. Section 1.0 and Section 3.0 added reference to UTAS-SCM-PRO-0003. Section 1.0 added references to ASQR-01 Form 2, AS13000 and AS9146. Section 4.1 added Order of Precedence (4.1.5). Section 4.4 – added para 4.4.3 for technical documents to be in English. Section 4.5 removed information and added reference to UTAS-SCM-PRO-0003 to para. 4.5.2. Section 4.6, added additional change notification conditions. 4.12 added special process Nadcap requirements as defined by ASQR-01 and UTAS-SCM-PRO-0003, 4.20 added requirement to review ASQR-01 and UTAS-SCM-PRO-0003 compliance as part of the internal audit system. 4.24 added 8-D reference. 4.30.1 – added reference to ASQR-01 Form 2, 4.32 – Section added to address flow-down requirements to calibration providers to UTAS. Text changes are highlighted in yellow.	October 2018
M	Changed UTAS references to Collins throughout document. Updated reference to UTAS-SCM-PRO-0003 to COL-ASQR-PRO-0003.	April 2019

1.0 REFERENCES

- Collins (Goodrich) Purchase Order
- Collins Contract or Agreement
- Collins Terms and Conditions
- ASQR-01 UTC Aerospace Supplier Quality Requirements (available at UTC.com)
- ASQR-01 Form 2, Supplier Process Change Notification
- ASQR-01 Form 3, Supplier Request for Information
- ASQR-01 Form 4, Work Transfer
- ASQR-01 Form 6, Notification of Potential Quality Escape
- PHX-QA-0004-FRM, Request for Deviation / Waiver Form
- COL-FRM-0003, Nadcap Exemption Request
- COL-FRM-0004, Nadcap Waiver Request
- COL-FRM-0054, Supplier Corrective Action Request Form
- COL-ASQR-PRO-0003, Supplier Quality Requirements
- Goodrich Engineering Standard Practice – Age Control, Ship by Dates and Expiration Dates Specification SP-773 (Request from Collins Buyer)
- Goodrich Engineering Marking and Identification Specification PS-23 (Request from Collins Buyer)
- SAE AS9102 Aerospace First Article Inspection Requirements
- SAE AS9100 QMS - Aerospace Standard Requirements
- SAE AS9110 QMS – Aerospace Requirements Maintenance Organizations
- SAE AS9120 QMS – Aerospace Requirements for Stocklist Distributors
- SAE AS9146, Foreign Object Damage (FOD) Prevention Program
- ASQ/ANSI/ISO 9001 Quality Management System Requirements
- Goodrich “Request for Deviation / Waiver” Form, PHX-QA-0004-FRM
- Boeing D6-51991 Quality Assurance Standard for Digital Product Definition at Boeing Product Suppliers and Sub-tier Suppliers (Boeing.com)
- Airbus GRESS General Requirement for Equipment and System Suppliers

Note 1 – ASQR documents and forms are available at UTC.com

Note 2 – Collins Aerospace documents are located at:

<https://utcaerospacesystems.com/supplier-documents/>

Who We Are – Doing Business With Us – Supplier Documents & Disclosures –
Interiors – Evacuation Systems

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3.0 PURPOSE AND SCOPE

The policy of Collins Aerospace, Interiors – Evacuation Systems, otherwise referred to as Collins for the purpose of this document where applicable, is to design and produce quality products, which meet the needs and requirements of our customers, applicable regulatory and statutory agencies and 3rd party certification entities.

The term “Supplier” is used to reference an organization or entity that provides either product, material or service directly to Collins. The term “Sub-Tier Supplier” is used to reference an organization or entity that provides either product, material or service to a Collins Supplier. Terms “conformance” and “compliance” are recognized to be interchangeable.

This document, or any part of it, is a party to Collins purchase orders, contracts, or agreements. This document describes the elements of a quality system, which is required of Suppliers to the following Collins location or whenever referenced by a Collins Interiors - Evacuation Systems purchase order where applicable :

Collins Aerospace
Interiors – Evacuation Systems

For Suppliers designing, manufacturing, distributing, assembling or servicing aerospace products for Collins, the requirements of AS9100, current revision shall be utilized as a foundation to the Supplier’s Quality Management System, unless a written deviation is authorized by Collins. When applicable, the Aerospace Quality Standards AS9110 (Maintenance Organizations) and AS9120 (Distributors) shall be adhered to. The Sections detailed in this document are in addition to the requirements of AS-9100 Quality Standards.

The A-9000 document is a supplement to the UTC ASQR-01 UTC Aerospace Supplier Quality Requirements (available at UTC.com) and COL-ASQR-PRO-0003 Supplier Quality Common Supplier Requirements (<https://utcaerospacesystems.com/supplier-documents/>), and defines product, service and Quality Management System (QMS) requirements specific to Evacuation Systems quality and product requirements.

Performance of the above by Collins does not relieve the Supplier of contractual responsibilities.

These requirements mandate that all applicable requirements that are invoked or applied to the Collins purchasing document, including this statement, shall be flowed down to the Supplier’s Sub-Tier Suppliers.

Special Requirements Sections (4.25-4.32) shall apply dependent upon commodity type. Sections of 4.1 - 4.26 apply to all Collins Suppliers and their Sub-tier Suppliers; and Sections (4.25 – 4.32) are in addition to the required sections as applicable.

SECTION 4.0 – REQUIREMENTS

SECTION 4.1 – QUALITY MANAGEMENT SYSTEMS

- 4.1.1 The Supplier's quality system must be documented. Suppliers must maintain certification to AS/EN-9100 Quality Management Systems – Aerospace, or equivalent Aerospace certification such as AS-9110 or AS-9120 based on product and services provided.
- 4.1.2 The supplier may request a Collins Waiver/Exclusion by contacting their assigned Supplier Quality Engineer, for the QMS certification requirement defined in 4.1.1, based on considerations of products and services provided, quality performance, and current Quality Management System (QMS) in place, Collins on-site supplier audit results and supplier's responsiveness to quality issues. The Supplier Quality Engineer will provide the supplier with the appropriate form to document the request.
- 4.1.3 Collins reserves the right to perform audits for QMS compliance to Collins and industry standard QMS requirements. Additional audits relating to processes and products may also be performed as deemed necessary by Collins.
- 4.1.4 Adequate equipment and trained resources are to be made available to assure that products are produced which conform to all engineering drawings, specifications and purchase order requirements.
- 4.1.5 Order of Precedence of supplier flow-down requirements:
- 1) A-9000 Evacuation Systems Supplier Quality Requirements precedes
 - 2) COL-ASQR-PRO-0003, Collins Supplier Quality Common Supplier Requirements precedes
 - 3) ASQR-01, UTC Aerospace Supplier Quality requirements

SECTION 4.2 – SUPPLIER PERFORMANCE

All suppliers' quality and on-time delivery performance shall be monitored by Collins. Collins shall identify suppliers who are "key" to production, and provide supplier performance scorecards to those suppliers on a monthly basis. Those suppliers that are not meeting quality and on-time delivery performance requirements, shall be managed through the Collins supplier performance improvement processes.

SECTION 4.3 – CONTROL OF RECORDS

- 4.3.1 Quality records, which include final acceptance data reports, are to be maintained for a minimum of ten (10) years or as defined in a contract and are not to be destroyed unless approval is obtained from Collins. Records shall be available to Collins, its customers, and/or regulatory agencies, upon request, at any time during the retention period. When requested by Collins, these records must be provided within three (3) working days.
- 4.3.2 At the end of the retention period or the supplier ceases trading with Collins, or the supplier is unable to maintain the records, the supplier shall provide the option for Collins to take possession of the records. Records are not to be destroyed without written approval from Collins Supplier Quality Assurance. Collins shall maintain the right to access all or any portion of records with in the time period specified above.
- 4.3.3 Quality records may be in various types of media, including hard copy or electronic data. Records shall be protected and stored in a manner to preclude loss or damage. All records shall be retrievable and legible.
- 4.3.4 The Supplier and the Supplier's Sub-Tier Suppliers shall maintain verifiable objective evidence of all inspections and tests performed, results obtained and dispositions of nonconforming articles. These records shall be identified to associated articles, including heat and lot number of materials, unit or lot serialization. These records shall be made available to customer and/or government representatives upon request.
- 4.3.5 Supplier shall retain records per the following requirements and make the records available to Collins upon request, unless otherwise specified on the purchase order or design data:
- a) Retain Supplier and Sub-tier Supplier's Certificate of Conformances for a period of ten (10) years unless otherwise specified by engineering data or purchase order
 - b) Supplier's Certificate of Conformance must have traceability documentation back to the original manufacturer's Certificate of Conformance, if Supplier is not original manufacturer;
 - c) When test reports and/or inspection data, first article reports with associated supplier certificates of conformance are specified by purchase order or design data, the Supplier shall retain on file the Supplier's and Sub-Tier Supplier's (when applicable) reports and data for a period of ten (10) years;
 - d) When a purchase order references a Collins or customer drawing that specifies a customer specification and approved special processor, the Supplier must also provide the Certificate of Conformance from the customer approved processor source with the shipment.

4.3.6 Collins current design data and configuration control system consists of a merger of several different sources of original design data. Due to the multiple original design data sources, an initial issue or release can be indicated by one of three methods on Collins (Goodrich) drawings, specifications, component maintenance or overhaul data, acceptance test procedures, source control drawings, and other types of design data. The three initial issue or release methods are indicated in the issue or revision field as one of the following methods:

blank field (no entry)
“-“ (dash character)
N/C (no change)

The Supplier shall indicate an initial issue or release (revision) as “N/C” or “-“ on the Supplier Certificate of Conformance to Collins. A blank field is not acceptable for indicating initial issue or release, since the Certificate of Conformance may be misinterpreted as an omission to the revision field.

4.3.7 “White-out” or correction fluid shall not be used on product acceptance records. Corrections can be made by having the authorized person mark the error with a single line then make the correction, and initial and date the correction.

SECTION 4.4 – CONTROL OF DOCUMENTS

4.4.1 The latest revision of industry standards shall apply unless otherwise stated in the purchase order. It is the supplier’s responsibility to obtain these revisions.

4.4.2 All technical documents shall be available in English.

SECTION 4.5 – CERTIFICATE OF CONFORMANCE / ANALYSIS

4.5.1 Material supplied per Collins purchase orders must be accompanied by the Supplier’s Certificate of Conformance/Compliance (C of C). The C of C must state that the material supplied conforms to all applicable engineering drawing, specification and purchase order requirements. The C of C should be included with the required shipping documents (packing lists, etc.).

4.5.2 The Certificate of Conformance (C of C) shall indicate conformance to the requirements, as defined by **COL-ASQR-PRO-0003**, Section “Product Inspection Certification”.

4.5.3 The original manufacture’s Certificate of Conformance must accompany the supplier’s Certificate of Conformance, if the original manufacturer is not the same as the Collins supplier identified on the purchase order.

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- 4.5.4 When Collins procures a chemical, where the chemical composition / formulation and/or performance properties are defined by a Specification Control Drawing (SCD), the supplier is required to provide a Certificate of Analysis to demonstrate compliance to the SCD requirements.

SECTION 4.6 – NOTIFICATION OF CHANGES

- 4.6.1 Suppliers will notify Collins in writing using ASQR-01 Form 2, in advance of changes to their Quality System, management or ownership. Changes requiring notification include but are not limited to:
- 4.6.1.1 Change in location of facilities, processes or manufacturing equipment. Notification must be prior to relocation and with adequate time for hardware, system, process and material requalification prior to production delivery to Collins.
 - 4.6.1.2 Change in ownership, name changes or changes in senior company management.
 - 4.6.1.3 Change in quality leadership, system or controlled processes certification status, including suspensions or disapprovals. Certification changes may also include changes to certification body (CB), changes to certification scope and exclusions.
 - 4.6.1.4 Change in Material Resource Planning (MRP) software/system.
 - 4.6.1.5 Suppliers shall notify Collins of any processing, material, numerical control programming, die, mold, pattern, tooling changes, or repairs made to tooling used in the manufacture of material fulfilling Collins purchase orders that affect form, fit, function or service life of products and materials ordered.
 - 4.6.1.6 Additional notification conditions are defined in ASQR-01.
- 4.6.2 Supplier shall flow-down notification requirements to their sub-tier suppliers to ensure proper notification and communication regarding changes.

SECTION 4.7 – SOURCE INSPECTION

Collins, its Customer, Government, or regulatory source inspections may be required prior to shipment of product. When required, it will be noted in the comments or quality provision notes of the purchase order to the supplier.. The Source Inspector would be responsible for releasing product Collins at the supplier's site.

SECTION 4.8 – DESIGN AND DEVELOPMENT CONTROL

- 4.8.1 The Supplier shall maintain a system for implementing and recording changes in product configuration at effective points. When the Supplier is manufacturing to

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- a Collins design, a Collins customer design, or to a consensus standards organization design (MS, AN, NAS, etc.), no departure from the engineering drawing, test procedure and/or specification shall be made unless specifically authorized by the contract.
- 4.8.2 When the Supplier maintains design, engineering drawing, and/or specification control, no changes affecting form, fit or function shall be incorporated unless notifying Collins prior to implementation.
- 4.8.3 Unless otherwise specified, the design documentation and specification revision on the date of issuance of the purchase order shall be applicable. The Supplier shall adhere to the following system for application:
- a) The purchase order / contract which precedes
 - b) The applicable engineering drawing precedes
 - c) The applicable engineering specification which precedes
 - d) Industry Specifications
 - e) UTC/Collins/EVAC Supplier Quality Requirements

SECTION 4.9 - PURCHASING

- 4.9.1 Suppliers shall implement and maintain controls that assure products, materials, and services procured from Sub-tier Suppliers meet all requirements.
- 4.9.2 When required by design data or purchase order, the Supplier shall assure that both they and their Sub-tier Suppliers use only Collins and/or Collins customer approved special processors. (i.e. Boeing Process Specification – BACXXXX, Douglas Process Specification-DPSs, Airbus Industrie-DAs)
- 4.9.3 Suppliers shall maintain an Approved Supplier Listing (ASL) for products and services, in the format of a file or database, and define the type and extent of control exercised over Sub-tier Suppliers. The extent of control shall include a system to disapprove a Sub-tier Supplier when appropriate. If an ASL is not maintained, then alternate controls such as supplier audits, receiving inspection, Sub-tier supplier performance documentation (i.e. corrective actions, certificates of conformance, test data), and traceability records must be maintained for all product and/or services purchased that may impact product conformity.
- 4.9.4 Purchasing documents used by Suppliers shall clearly describe the products/services being ordered and all applicable quality requirements. Suppliers shall flow-down to Sub-tier Suppliers the applicable requirements in the purchasing documents, including key characteristics where required.
- 4.9.5 The Supplier shall periodically review and assess Sub-tier Supplier performance. Records of these evaluations shall be maintained and used as a basis for establishing the frequency of Sub-tier Supplier audits and product

inspections, and to assure satisfactory performance. Records of Sub-tier Suppliers/ actions will be maintained by the Supplier. Records shall be maintained for a minimum of ten (10) years unless otherwise specified by contract.

- 4.9.6 Supplier shall review and approve purchasing documents for adequacy of the specified requirements prior to release.
- 4.9.7 The Supplier shall flow down Collins traceability and records requirements to Sub-tier Suppliers for product and services procured from Supplier for the fulfilling Collins purchase order products and services requirements.
- 4.9.8 Suppliers shall provide and ensure that Sub-tier Suppliers have the current design and technical data that is applicable to products and services for Collins and its customers.
- 4.9.9 Where the Supplier utilizes test reports to verify purchased product, the data in those reports shall be acceptable per applicable specifications and design requirements.

SECTION 4.10 – PRODUCTION AND SERVICE PROVISION

- 4.10.1 The Supplier shall establish and maintain procedures, which will provide for the control of manufacturing and inspection operations for material and services.
- 4.10.2 Suppliers have the responsibility to assure that products conform to all requirements specified on engineering drawings, specifications and purchase orders. Objective evidence must be maintained which verifies that all manufacturing and inspection operations have been performed.
- 4.10.3 The Supplier shall implement activities to prevent, detect and remove foreign objects, which may damage or contaminate products.
- 4.10.4 Tooling, e.g. dies, templates, fixtures, jigs, etc. affecting quality of product shall be audited/inspected periodically. Evidence or records of these inspections or audits shall be maintained by the Supplier.

SECTION 4.11 – CONTROL OF SPECIAL PROCESSES AND MATERIALS

- 4.11.1 Only Nadcap certified special process suppliers are authorized to perform special processes. The use of Collins approved sources does not relieve the supplier's responsibility for the quality of purchased products and services. Qualification of a subcontractor to perform a customer controlled process (e.g., the Boeing BAC or DPS specification,), requires prior customer approval. Customer listings must be reviewed for approved customer identified providers.
- 4.11.2 Contact the Collins buyer for a listing of controlled special processes /materials and listing of approved suppliers/processors.

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- 4.11.3 Applicable special processes requiring Nadcap certification are defined in ASQR-01 and COL-ASQR-PRO-0003.
 - 4.11.4 Specific written authorization must be obtained from Collins in the absence of accreditation. It is the responsibility of the supplier to ensure sub-tier compliance.
 - 4.11.5 This requirement does not apply to Standard Catalog Hardware, raw material and Commercial Off The Shelf (COTS) items.
 - 4.11.6 Suppliers may request either a temporary Nadcap Waiver (COL-FRM-0004) while the supplier pursues Nadcap accreditation or a Nadcap Exemption (COL-FRM-0003) based on the criticality and type of process service being provided.

SECTION 4.12 - PRODUCT IDENTIFICATION AND TRACEABILITY

- 4.12.1 The Supplier shall establish and implement procedures for identifying product from receipt through all phases of production and delivery. Supplier shall maintain traceability for materials used in the manufacture, processing and service of items to satisfy Collins purchase orders.
- 4.12.2 Product shall be identified as specified on the engineering drawing, specification and purchase order. For non-metallic product, materials and articles, identification and marking should be done with contrasting stamped ink, where surface area allows for such marking and the marking is legible. Otherwise, the product, materials and articles must be identified in a manner that will ensure traceability is maintained throughout the life cycle of the product.
- 4.12.3 Serial numbers will be added in accordance with engineering drawings, specifications, or purchase order requirements. When serial numbers are utilized, the Supplier shall maintain a serialization record for each serialized component manufactured. Suppliers shall not duplicate serial numbers regardless of revision or configuration changes.
- 4.12.4 Parts manufactured to Collins (Goodrich) drawings shall be identified with part number and revision letter as noted on Collins purchase order per Collins Engineering Marking and Identification Specification PS-23, unless otherwise specified by Collins (Goodrich) drawing or specification. Miscellaneous hardware, such as off the shelf items, Mil Spec parts, or other Supplier controlled items shall be identified per applicable drawings, specification or purchase order requirements.
- 4.12.5 Suppliers shall be restricted from physically marking "FAA-PMA" for product for Boeing applications.
- 4.12.6 All chemicals must identify part number, date of manufacture, recommended shelf life, recommended pot life or expiration dates and recommended storage conditions on containers and/or requested certifications.

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- 4.12.7 Elastomer parts (i.e. o-rings, packing, flanges, seals rings, etc.) sold to Collins, shall be identified with Collins part number, revision, manufacturing batch number, and cure date, if applicable. O-rings shall be individually packaged and marked with the above information. Certificates of conformance shall include recommended manufacturing shelf life or expiration date.
 - 4.12.8 Fabric rolls shall identify part (specification) number, quantity, material lot number, roll number, date of manufacture or cure date, as applicable.
 - 4.12.9 Traceability shall consist of information that allows the product or material to be uniquely identified and traceable. In addition to part number and revision level, traceability shall consist of, but not be limited to one or a combination of the following: serial number, lot number, batch number, purchase order or agreement number, manufacture dates, cure dates, etc. Special processes such as anodizing, plating, heat treat, passivation, etc. must be traceable to the material being processed and delivered to Collins.
 - 4.12.10 When signatures and initials are used, a master signature and initial record shall be maintained.
 - 4.12.11 When inspection stamps are used, they shall be traceable to a specific individual.
 - 4.12.12 Records shall be maintained reflecting the distribution and accountability of all inspection stamps.
 - 4.12.13 All unassigned stamps shall be accounted for and held in a secure area.
 - 4.12.14 Stamps that create illegible impressions shall be removed from service and destroyed. The stamp number for a lost stamp shall be permanently removed from service and duplicate stamps destroyed.
 - 4.12.15 Facsimiles of stamp impressions and descriptions of the configuration and use of each stamp shall be documented.
 - 4.12.16 Acceptance status shall be identified per Collins Engineering Marking and Identification specification PS-23 or engineering drawing or specification as applicable.
 - 4.12.17 No material or process substitutions, quantity variations or splits from the purchase order may be made without prior written authorization from Collins.

SECTION 4.13 – WORK TRANSFERS

- 4.13.1 Suppliers must notify Collins Supplier Quality in writing of any transfer of manufacturing processes, including from one manufacturing site to another, or between the supplier and a sub-tier supplier, from one sub-tier supplier to a another sub-tier supplier.
- 4.13.2 Suppliers are required to support the transfer of work to or from their facilities in accordance with the Collins Work Transfer process. This includes work

transfers from one of a supplier's manufacturing site to another. Supplier must submit an ASQR-01 Form 4 for Work Transfer Notification to Collins Supplier Quality.

- 4.13.3 If the supplier intends to transfer work to a non-US manufacturing location, Collins shall notify the FAA Manufacturing Inspection District Office (MIDO) for review and determination of undue burden, prior to the supplier performing the work transfer.
- 4.13.4 Upon receipt of supplier notification of work transfer, Collins may elect to conduct an on-site assessment of the supplier or sub-tier's quality system, production processes, business capabilities.
- 4.13.5 The incumbent supplier will be required to perform current first article inspections of all affected part numbers and the future source will be required to perform first article inspections per AS9102 standard and submit to Collins for review and approval prior to shipment of product from future source.
- 4.13.6 The risk management process as defined in section 4.24 shall be applied as part of the work transfer activity.

SECTION 4.14 - CUSTOMER PROPERTY

- 4.14.1 Suppliers shall establish and maintain procedures for the control of customer supplied products, materials, and tooling. Products or material, which have been lost or damaged, shall be recorded and reported to Collins.
- 4.14.2 Suppliers have the responsibility to verify the acceptability of material supplied by Collins prior to further processing or use.
- 4.14.3 Customer supplied items shall be stored in an environment and manner to preclude loss, damage or deterioration.
- 4.14.4 Identification, traceability, and age control shall be properly documented and controlled for customer supplied/owned product.

SECTION 4.15 –PRESERVATION OF PRODUCT

- 4.15.1 Procedures shall be implemented to ensure that materials and product are properly handled, stored and packaged, and shipped, to prevent foreign object damage (FOD), transportation damage, contamination and/or deterioration. Suppliers shall follow the guidelines of ASQR-15.1 which is based on specifications AS9146 (FOD) and Mil-Std-1686 (ESD). Additional requirements are listed in ASQR-15.1 for handling, storage controls, preservation and packaging, shipping and records.
- 4.15.2 Shipments shall be inspected to assure completeness of manufacture, proper packaging of material and the inclusion of appropriate documents.

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- 4.15.3 Supplier shall notify Collins if any of the goods contain material hazardous or injurious to the health or physical safety of persons. In addition, Supplier shall provide to Collins with each delivery of goods, a Material Safety Data Sheet (MSDS) meeting the requirements of applicable laws and regulations.
 - 4.15.4 Duplicate copies of the Supplier's packing lists are required with each shipment. One copy shall be located on the outside of the box, and the second copy shall be located on the inside of the box in the event the outside copy is lost or destroyed during shipping.
 - 4.15.5 Shelf life control items and materials shall be controlled per Collins Engineering Specification Standard Practice SP-773 "Age Control, Ship by Dates, and Expiration Dates".
 - 4.15.6 Shelf life control items must have a minimum of two-thirds (2/3) ship-by-date life remaining on the item at the time of shipment to Collins, unless otherwise defined by SP-773 or design documentation. Items with less than the minimum two-thirds (2/3) ship by date life may be acceptable with written authorization from Collins Procurement, prior to shipping. This written authorization must accompany the shipment. Note Evacuation Systems customers may specify more stringent shelf life remaining requirements, which will be noted on the purchase order.
 - 4.15.7 For shelf dated items, the Supplier shall require information regarding recommended storage conditions, shelf life, expiration dates, date of manufacturing, or pot life requirements as applicable to the type of item purchased from the Sub-tier Supplier. This information should be located on either the container and/or requested certifications.
 - 4.15.8 The Supplier shall be responsible for ensuring that items provided under the Collins contract or purchase order are packaged in such a manner that the dimensional integrity is preserved, contamination and corrosion are prevented, and no physical damage occurs. Packaging when specified shall be in accordance with the drawing, specification, SCD or other applicable industry standard that prevents damage, deterioration, substitution or loss in transit.
 - 4.15.9 The Supplier shall label the exterior of the package to ensure adequate identification of precautions needed to ensure the integrity of the product being shipped. The Supplier must specify the handling and shipping methods, unless otherwise specified by Collins, to ensure proper quality and on-time delivery without damage to the product.
 - 4.15.10 All solvents and chemicals shall be supplied only in a new container that has not been previously used to prevent contamination by residual material.
 - 4.15.11 Elastomer parts consisting of o-rings, seals and packing, shall be packaged individually, in opaque or solid packaging, to protect the parts from sunlight or ultraviolet ray exposure.

SECTION 4.16 – COUNTERFEIT PARTS

- 4.16.1 Suppliers must have a counterfeit parts prevention program. The purpose of this program shall be to prevent the delivery of counterfeit parts and control parts identified as counterfeit. Further guidance can be found in SAE AS5553. Non- electronic product shall follow the guidelines of SAE AS 6174. Seller agrees and shall ensure that Counterfeit Parts are not contained in products delivered to Collins.
- 4.16.2 Counterfeit parts prevention program include:
- All parts and materials shall be procured only through original equipment manufacturers (OEMs/OCMs), or their franchised dealer or distributors.
 - The supplier shall verify the procurement sources and associated certifying paperwork.
 - Appropriate incoming inspection test methods shall be used to detect potential counterfeit parts and materials.
 - The supplier shall not use unapproved brokers (any company, person, or entity who is not an OEM/OCM or not an OEM/OCM authorized franchised dealer or distributor) for the purchase of components/materials/parts unless pre-approval has been granted by Collins.
 - The OEM or Franchised Distributor shall provide with the shipment, a Certificate of Conformance, certifying that the component provided is the part number being procured on the Collins Purchase Order.
 - A certificate from a Franchised Distributor must also establish traceability to the Original Manufacturer (OEM). The preferable method is for the Franchised Distributor to provide a copy of the Manufacturer's certificate for the lot number being supplied, along with their Franchised Distributor certification.
 - In the event SELLER becomes aware or suspects that it has furnished Counterfeit Parts, it shall immediately notify Collins. When required by Collins, SELLER shall provide OEM/OCM documentation that authenticates traceability of the parts to the applicable OEM/OCM.
- 4.16.3 Flow down: SELLER shall flow this clause down to all sub-tier suppliers to prevent the inadvertent use of Counterfeit Parts and materials.

SECTION 4.17 - CONTROL OF MONITORING AND MEASURING DEVICES

- 4.17.1 The supplier shall have a documented calibration system that meets the requirements of ISO 10012, ANSI/NCSL Z540 or ISO 17025.
- 4.17.2 When tooling and fixtures are used as a means for inspection/acceptance of product, it must be included as part of the calibration system or tool control system.
- 4.17.3 Each calibrated item shall be checked against a standard which has greater accuracy. The standard shall be traceable to the National Institute of

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- Standards and Technology (NIST) or another appropriate national measurement standard.
- 4.17.3 Calibration is conducted upon receipt of the device independent of the manufacturer's certification, if calibration inspection data is not provided and/or is not traceable to the National Institute of Standards and Technology (NIST) or equivalent by the manufacturer upon receipt.
- 4.17.4 Measuring equipment shall have unique identification to allow for calibration record traceability and recall as necessary.
- 4.17.5 Records defining the calibration intervals for each piece of equipment shall be maintained. These records shall include the date of the last calibration and the individual who performed it. They shall also include the date of the next scheduled calibration. This information shall be attached or traceable to each piece of equipment. Records, which provide evidence supporting the established intervals, must be maintained.
- 4.17.6 When equipment is found to be out of calibration, procedures shall be established which define the action to be followed regarding inspection equipment and previously accepted product.
- 4.17.7 The Supplier's quality system shall define which personnel or position has the responsibility to perform calibrations and ensure they have proper qualifications and training records documented.

SECTION 4.18 – MEASUREMENT, ANALYSIS AND IMPROVEMENT - GENERAL

- 4.18.1 Suppliers shall establish procedures to assure that appropriate inspections and tests are performed throughout the manufacturing process, including incoming inspection, in-process and final inspections, testing.
- 4.18.2 Suppliers shall establish and maintain a system for assuring that the items, materials and services purchased from their Sub-tier Suppliers comply with Collins specified requirements.
- 4.18.3 Procedures shall also address any inspections to be performed at Sub-tier Suppliers as well as any inspections to be performed by Collins or Collins customers. Shipping documents, certificates of conformance, and/or other paperwork submitted to Collins shall bear evidence that these inspections have been performed.
- 4.18.4 When applicable, positive recall procedures shall be established to address processing of material prior to verification of conformance to requirements.
- 4.18.5 Incoming material shall be inspected or verified to ensure compliance to requirements prior to further processing. When material is accepted based on certifications or test reports, the Supplier shall schedule periodic tests to substantiate conformance requirements.

SECTION 4.19 – INTERNAL QUALITY AUDITS

Suppliers must include an annual review of the ASQR-01 and COL-ASQR-PRO-0003 compliance as part of their internal quality audit system. Recommend use of Collins Form 45 to audit purposes, which can be requested from Supplier Quality.

SECTION 4.20 – MONITORING AND MEASUREMENT OF PRODUCT

- 4.20.1 Items or lots shall be inspected and/or tested to insure specification and requirements compliance, either by 100 percent inspection or Sampling Plan as defined in ASQR-01 and ASQR-20.1. If destructive testing is required to determine acceptability, a minimum of five (5) percent random test samples from each lot will be inspected / tested. A lot will be considered acceptable if no defects are found in the test sample. Exceptions shall be per Collins approved acceptance test procedure.
- 4.20.2 When specified per purchase order or design data which identifies key characteristics, Collins requires implementation of statistical process controls that meet the intent of AS9103 Variation Management of Key Characteristics on specific characteristics, part numbers or processes. Process certification per ASQR-01) is not required unless specified per purchase order, contract or design data.

SECTION 4.21 – FIRST ARTICLE INSPECTION

- 4.21.1 The Supplier must perform the First Article Inspection per the SAE AS9102 First Article Inspection Aerospace Standard. The supplier's system must provide a process for the inspection, verification, and documentation of the first production article, and updates to it, in accordance with the current revision of AS9102 (Aerospace First Article Inspection Requirement).
- 4.21.2 Forms to complete an FAI may be obtained at <http://www.sae.org> and must be completed in English. Equivalent formats may be utilized for FAI reporting.
- 4.21.3 Suppliers utilizing sub-tiers are required to flow-down the specific First Article Inspection requirements of AS9102 and this document to all applicable sub-tier suppliers.
- 4.21.4 A copy of Supplier's First Article Inspection Report shall be submitted to Collins Supplier Quality Engineering in advance of shipment unless verified and validated by the Collins Interiors- Evacuation Systems Supplier Quality Engineer at the Supplier's facility.
The Supplier is not authorized to ship product until Collins approves the FAIR or otherwise provides authorization for shipment prior to completion of the FAIR approval.
- 4.21.5 First Article Inspection Report can be submitted electronically for review in advance of shipment. Special circumstances may apply if Collins requests in

writing that the product is requested to be shipped while the First Article Inspection is reviewed by Collins.

- 4.21.6 All FAIRs and Certificates of Conformance shall have a signature of the responsible representative of the supplier.
- 4.21.7 First Article Inspections shall be performed when:
- First production lot submitted by the Supplier;
 - A change in manufacturing source(s), process(es), including chemical and physical properties, that would affect specification or purchase order requirements, inspection method(s), location, tooling or materials that can potentially affect fit, form, function, specification or purchase order requirements;
 - When required as part of corrective action for a part number with repetitive rejection history (typically, a part with three repeated rejections or as required by Collins or their customer);
 - The implementation of a new part number or change in design affecting form, fit or function of the part (typically documented by a revision to the part number);
 - A change in numerical control program or translation to another media that can potentially affect fit, form or function;
 - A natural or man-made occurrence which may adversely affect the manufacturing process;
 - A lapse in production for two years or as specified by Collins (Goodrich) Purchase Order. The Supplier shall perform a FAI, even though no design or process change has occurred.

SECTION 4.22 - CONTROL OF NON-CONFORMING

- 4.22.1 The controls and related responsibilities for dealing with nonconforming product shall be defined in a documented procedure. The Supplier's documented procedure shall also define the responsibility for review and authority for the disposition of nonconforming product and articles, and the process for approving personnel making these decisions.
- 4.22.2 Suppliers are not authorized to disposition nonconforming product, of Collins or Collins customer design, unless material review authority is granted in writing. Suppliers may request disposition of nonconforming product or condition by generating either a supplier's nonconforming report or a deviation/waiver request prior to shipment. The deviation/waiver request can be submitted on the Collins "Request for Deviation / Waiver" Form (RDW), PHX-QA-0004-FRM. Verbal agreements or instructions shall under no circumstances be construed as approval or authorization to proceed.

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- 4.22.3 Nonconformance documentation (nonconforming report or deviation / waiver) submitted to Collins for disposition and approval, must be reviewed, approved and signed by both Collins Engineering MRB and Collins Quality MRB.
- 4.22.4 A copy of the nonconformance documentation relating to the shipped product, must be included with the shipped product's paperwork. Additionally, the Supplier's Certificate of Conformance shall denote either the nonconforming report number or the deviation / waiver title (subject), date and the deviation/waiver number as applicable.
- 4.22.5 When a supplier has any reason to suspect or knows that non-conforming product has been delivered to Collins or Collins customer, the supplier shall notify the buyer (at a minimum) within 24 hours, followed by a commercial letter (reference AS9131) to the responsible buyer and Supplier Quality representative. Notification will include the following information at a minimum on ASQR-01 Form 6:
- ASQR-01 Form 6, Notification of Potential Quality Escape
 - Part Numbers affected
 - Quantity
 - Detailed description of the non-conformance
 - Containment actions
 - Purchase Order number(s) and line item number(s)
 - Information required identifying the non-conforming hardware, e.g., serial number, lot number, date of manufacture, etc.
 - Shipping date, destination, carrier, bill of lading, or any other information necessary to locate the non-conforming product
 - Cause of defect, if known at the time
 - Dates when additional information or outcomes of investigations will be available.

SECTION 4.23 - CORRECTIVE ACTION

- 4.23.1 Suppliers shall establish documented process requiring corrective actions for nonconforming products, articles or services. A request for corrective action shall be issued to the source that provided the products, articles or services. This shall include both Supplier and Sub-tier Supplier's organizations.
- 4.23.2 Collins requires a corrective action response/plan to be submitted within thirty (30) calendar days from notification. Depending upon the severity of the nonconformance, an expedited time frame may be requested by Collins.
- 4.23.3 Supplier Corrective Action Request (SCAR) will be issued to suppliers on form COL-FRM-0054 and COL-FRM-0055.
- 4.23.4 The supplier must complete the SCAR and return to the issuing Collins location by specified due date and include the appropriate mistake proof level

utilized to prevent recurrence. If a response cannot be generated in this timeframe, the Supplier must request an extension from the issuing Collins location.

- 4.23.5 Supply should identify the level of mistake proofing level applied as part of the corrective action. The levels are defined as follows:
- Level 1 – Prevents a mistake from happening
 - Level 2 – Alerts that a mistake is happening
 - Level 3 – Detects a mistake after it occurs

SECTION 4.24 – RISK MANAGEMENT

- 4.24.1 The supplier shall maintain a risk management process describing 5 major activities:
- Risk Identification
 - Risk Assessment
 - Action planning for mitigation and contingencies
 - Risk/Action monitoring
 - Risk Reporting and Tracking
- 4.24.2 The risk identification and mitigation/contingency status is regularly updated with newly identified risks as they occur throughout the life cycle of the product.
- 4.24.3 Suppliers may be requested to provide risk management results and reports to Collins as part of any product development, work transfer, significant process changes (including relocation, sub-tier supplier changes, manufacturing process changes, etc.).

SECTION 4.25 – REQUIREMENTS FOR FABRIC SUPPLIERS

- 4.25.1 Specified final acceptance test data reports shall be included with the packing sheets for each shipment. Test records shall be identified with part number, lot number and/or roll number, quantity, and date of manufacture.
- 4.25.2 The Fabric Supplier shall retain a minimum of one (1) linear yard of fabric from each delivered fabric lot, referred to as a fabric retain, for a minimum of seven (7) years. The retain shall be of appropriate size to ensure that retesting can be performed for investigation or re-validation purposes in the event of quality or field issues relating to the fabric.

SECTION 4.26 –GAS CYLINDERS AND PYRO TECHNIC DEVICES

- 4.26.1 Suppliers of gas cylinders must provide cylinders that are within twelve (12) months of manufacturing date and hydrostatic test date. Cylinders that are older than twelve (12) months from manufacturing date, may be acceptable with written authorization from Collins Engineering, prior to shipping. This written authorization must accompany the shipment.
- 4.26.2 Suppliers of gas cylinders must provide to Collins, Supplier Certificates of Conformance, manufacturing material and test/inspection data reports. Inspection records shall be identified with part number, serial number, quantity, and date of manufacture relating to the shipment.
- 4.26.3 Suppliers of pyro technic devices shall:
- a) Provide reliability data (reliability %, with identified confidence level) based on total number of squibs manufactured to date with shipment as applicable.
 - b) destructive lot acceptance tests shall be 5% minimum of lot
 - c) Each pressure cartridge assembly shall be individually bagged. The bag shall be labeled with Collins (Goodrich) P/N, Rev., MFG P/N, Description, Date of Manufacture, Lot Number, and dangerous goods description and classification
 - d) In the event of a conflict in reliability testing and reporting requirements, Collins Engineering design data shall supersede the A-9000 requirements.

SECTION 4.27 - INDIA SLIDE/RAFT MANUFACTURER REQUIREMENTS

- 4.27.1 Collins India slide manufacturer must submit a Certificate of Conformance with each slide shipment, products and kits delivered to Collins.
- 4.27.2 In the event a slide fails to meet a Collins Acceptance Testing Procedure (ATP) requirement, it shall be documented on a quality notification (QN), which a hard copy of the QN shall be included with the shipped slide paperwork and denoted on the Certificate of Conformance. This will allow Collins to retain traceability and history of the delivered slide for future reference if needed.

SECTION 4.28 – SUPPLIERS AND SUB-TIER SUPPLIERS QUALITY ASSURANCE STANDARD FOR DIGITAL PRODUCT DEFINITION (DPD) AND MODEL BASED DEFINITION (MBD) DATA

- 4.28.1 Digital Product Data. There are 3 formats that are considered Digital Product Definition (DPD):
- The CAD model and fully dimensioned 2D drawing sheets

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- The CAD model and simplified or reduced content 2D drawing sheets. This is a reduced content format, and is sometimes labeled as Reduced Dimension Drawing (RDD) or Simplified Drawing (SD).
 - The 3D model and the engineering requirements displayed as text within the 3D viewing area of the model, as well as the remaining engineering requirements (in 2D form – notes list, part lists, etc.). This is also termed Model Based Definition (MBD)

Examples of DPD data include IGES/STEP files, electronic 2D drawings and parts lists, CAD files.

- 4.28.2 The supplier will be responsible for the maintenance, change incorporation, use of DPD and observation of security restrictions by sub-tiers for design, manufacturing and inspection.
- 4.28.3 Flow down to sub-tier suppliers shall include ITAR (International Traffic in Arms Regulations), MLA (Manufacturing License Agreement), MA (Manufacturing Agreement), TAA (Technical Assistance Agreement) and EAR (Export Administration Regulations) requirements.
- 4.28.4 All digital product definition (DPD) data shall be transmitted to and received from Collins via an encrypted data exchange service. Suppliers shall have an established account established by Collins Supply Chain.
- 4.28.5 BOEING PRODUCT SPECIFIC REQUIREMENTS
- 4.28.5.1 The supplier will flow down the requirements of the Boeing D6-51991 or equivalent document to sub-tier suppliers and document sub-tier supplier compliance when Boeing authority datasets or dataset derivatives are used for manufacturing or product acceptance. This would include design collaboration when design responsibility is shared with sub-tier suppliers.
- 4.29.5.2 The supplier is fully responsible for and will establish procedural controls to assure Boeing DPD transferred (authority or derivatives) between their company and all levels of sub-tier suppliers will be in compliance to the D6-51991 standard.
- 4.28.5.3 Boeing reserves the right to survey and/or review the applicable DPD quality assurance and configuration management systems of the supplier and the sub-tiers.

SECTION 4.29 - DELIVERED TOOLING, FIXTURES, TEMPLATES AND JIGS (ALSO REFERRED TO AS “ITEMS”)

- 4.29.1 Suppliers that produce tooling, fixtures, templates and jigs that are used for the manufacture and/or measurement of product, which are produced per Collins design data (model based definition, digital product definition, 2-D drawings, etc.) shall provide a Certificate of Conformance with the delivered items.

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- 4.29.2 The Supplier must perform the First Article Inspection per the AS9102 First Article Inspection Aerospace Standard for the first part manufactured. See Section 4.22 First Article Inspection for requirements and application. Note, the First Article Inspection report must be submitted to the Collins Supplier Quality Engineer for review and approval prior to the item(s) delivery to Collins.
- 4.29.3 All tooling, fixtures, templates and jigs shall be inspected to Collins design data requirements. Inspection measurements (actuals) are to be documented and provided to Collins with the shipment, to demonstrate designated inspection characteristics and/or dimensions / coordinates are in conformance to design i.e. – if the item is manufactured to model based definition, the supplier shall provide a 3-D overlay file or comparison coordinate file/document as part of the inspection documentation to be submitted to Collins for each item.
- 4.29.4 Items shall be marked in a permanent manner (stamped), when size permits, with the following information:
- Part number and dash number and revision level (XXXXX-X REV. X)
 - Date of Manufacture identified as: DOM MM-DD-YY
 - Unique serial number, consisting of the purchase order number appended with a two (2) digits unique sequence number based on quantity, i.e. PO # 1234567-01, PO # 1234567-02, etc.
 - Refer to PS-23 Collins (Goodrich) Marking and Identification specification requirements
- 4.29.5 In the event the Collins design data conflicts with this supplier quality identification requirements, the Collins design data supersedes this requirement. If the item does not have an adequate surface to permanently identify item, then identification per paragraph 4.29.4 can be done using a label or tag, which ever will ensure the identification and traceability can be maintained.
- 4.29.6 A copy of the Certificate of Conformance and inspection data shall be included with the shipment of each item delivered to Collins. Electronic media is acceptable for model definition overlay data.
- 4.29.7 If materials or special processes (i.e. heat treat, anodize, sealant, plating, welding, etc.) are designated on the Collins design data, then material certificates and/or processing certificates are required to be included with the item's quality documentation to be delivered to Collins.
- 4.29.8 In the event the item does not meet Collins design requirements, then the supplier shall initiate a Request for Deviation/Waiver (RDW) form, documenting the nonconformance condition. The non-conformance documentation shall be submitted to Collins Engineering and Quality for review and disposition prior to shipment to Collins.

SECTION 4.30 – OBSOLESCENCE MANAGEMENT

- 4.30.1 In the event that an item or material becomes obsolete, Collins requires a minimum 12 months prior notification of such and reserves the right to make a 'last buy' to ensure uninterrupted delivery to the end customer. This notification shall be submitted to the Collins buyer using the ASQR-01 Form 2.
- 4.30.2 It is recommended that suppliers who are affected by obsolescence utilize an obsolescence management process, which include risk management tools. The obsolescence management process should be flowed down to sub-tier suppliers as appropriate.

SECTION 4.31 – BOEING PARTS AND/OR MATERIALS SHIPPING DOCUMENTATION REQUIREMENTS

When the Boeing application is referenced on either the Collins (Goodrich) or Boeing design data, the supplier shall place the following statement on the appropriate shipping document (either certificate of conformance, packing slip or shipper) for parts and materials being shipped to Collins. Where the Boeing application is not identified per the design data, then the statement is not applicable.

“Seller hereby acknowledges that the parts and/or materials being shipped under this order are intended for use under Boeing’s Federal Aviation Administration (FAA) issued Production Certificate 700 and no articles (or constituent parts thereof) or the accompanying paperwork (e.g., packages, shippers, etc.) contain any Federal Aviation Administration-Parts Manufacturer Approval (FAA-PMA) markings.”

SECTION 4.32 – CALIBRATION SERVICE PROVIDERS TO COLLINS (GOODRICH)

- 4.32.1 Calibration service providers must be ISO 17025 Certified or equivalent in order to perform calibration services for Collins. The exception to the ISO 17025 certification requirement is if the service provider is the manufacturer of the measurement device.
- 4.32.2 The calibration service providers must provide at a minimum, the following information on the Certificate of Calibration with the measurement device:
- Customer Name (Collins)
 - Customer Address (Collins)
 - Purchase Order Number (PO#)
 - Measurement Device Description

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- Measurement Device Manufacturer
 - Measurement Device Model
 - Measurement Device Serial number or Collins Assigned identifier
 - Calibration test data traceable to NIST standards or equivalent standard
 - As Received/Found Condition
 - Condition as Returned
 - Calibration Date
 - Calibration Due Date
 - Environmental conditions, i.e. temperature and humidity
 - Calibration Procedure reference
 - Calibration standards used and calibration expiration date of standards
 - Name of calibration technician performing calibration