LOCKHEED MARTIN

QM003

Quality Requirements for Suppliers

Issue 10

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Lockheed Martin UK Ampthill Ltd

Contents

1. Introduction

1.1. Quality of the Product

Lockheed Martin's business depends on a reliable, global network of skilled suppliers that provide the materials, parts and services to make our products and deliver them to our customers, conforming to Lockheed Martin UK Ampthill (LMUK-A) requirements, mission-ready and on time. Goods and services provided by our suppliers have a key impact on the quality of the products, solutions and services we offer our customers.

1.2. Supplier Quality Engineering & Global Supply Chain Operations Ampthill

The LMUK-A Supplier Quality Engineers (SQE) and Global Supply Chain Operations Ampthill (GSCO-A) are a dedicated collaborative team that engage and develop relationships throughout the supply chain. The SQE team have a high level of engineering knowledge and experience in reviewing quality requirements, sub-tier approval and nonconformity problem solving.

2. Scope

2.1. Aim

The aim of this document is to formally communicate the LMUK-A quality requirements to external providers of processes, products and services in accordance with AS9100 8.4.

2.2. Distribution

QM003 shall be distributed to sub-contractors, suppliers and the sub-tier supply chain. The supplier is responsible for ensuring that its own organisation and entire supply chain that provides an end product or service which forms part of a product or service required by LMUK-A meets the appropriate quality requirements. This information to be controlled in accordance to relevant contracted security classification of information to be exchanged between LMUK-A and supplier. For example a Non- Disclosure Agreement may be required for exchange of proprietary information and data.

2.3. Definitions

The terms "shall" and "must" mean that the described action is mandatory; "should" means that the described action is expected with some flexibility allowed in the method of compliance; and "may" means that the described action is permissible or discretionary.

2.4. Order of Precedence

Any inconsistencies in this document shall be resolved in accordance with the following order of precedence: (1) Statutory and regulatory requirements, (2) the contract (purchase order), including any special terms and conditions, (3) the drawing, design data and any approved concession or production permit, (4) any Statement of Work, (5) QM003.

3. Approved Supplier Minimum Requirements

3.1. Quality Management System

The minimum quality requirement for all suppliers of goods supplied, work performed and services provided to QM003-A & QM003-B shall be Quality Management System (QMS) certification to ISO9001 by a UKAS (or international equivalent) accredited certification body.

3.1.1. Supplier Responsibilities

Suppliers shall provide up-to-date copies of quality management certification and the scope for which they apply.

3.2. Cyber Essentials, Data Handling and Security

Proprietary Information provided or to be stored in electronic form shall only be stored on electronic system(s) that have been certified to the HMG Standard Cyber Essentials Scheme (CES), or alternative certification approved by LMUK-A.

3.2.1. Handling Sensitive and Proprietary Data

Sub-tier suppliers and sub-contractors used by the supplier that have access to any sensitive or LMUK-A proprietary data must be authorised with a Non-Disclosure Agreement (NDA) in place with LMUK-A.

3.2.2. Security

Suppliers working at OFFICIAL-SENSITIVE/LEGACY RESTRICTED, will be required to undergo a security assurance visit and risk assessment by LMUK-A Security personnel prior to the exchange of any sensitive information. Following the initial security assurance visit, the supplier will be required to complete an annual security questionnaire for review.

3.3. JOSCAR

JOSCAR is a collaborative tool used by the aerospace, defence and security industry to act as a single repository for pre-qualification and compliance information. Using JOSCAR can determine if a supplier is "fit for business". All suppliers that are not currently JOSCAR registered are encouraged to request registration invitation via the LMUK-A supply chain representative.

3.4. Site Visits and Supplier Audits

Where appropriate, suppliers shall be subject to on-site audit and / or site visit by LMUK-A. In some instances, LMUK-A will be unable to raise a contract until completion of successful supplier audit. Scheduled verification audits, site visits and business to business meetings shall be supported when required. In some circumstances verification at source acceptance inspection and witness testing by LMUK-A Supplier Quality representative shall be required prior to shipment of product.

3.5. Control of Externally Provided Processes, Products and Services

The supplier shall flow down the requirements of QM003 and must: -

- Ensure that externally provided processes, products, and services conform to requirements
- Be responsible for the conformity of all externally provided products and services, including from sources defined by LMUK-A
- Ensure, when required, that LMUK-A designated or approved external providers, including process sources are used
- Identify and manage the risks associated with the external provision of processes, products and services, as well as the selection and use of external providers
- Require that external providers apply appropriate controls to their direct and sub-tier external providers, to ensure that requirements are met
- Determine and apply criteria for the evaluation, selection, monitoring of performance, and reevaluation of external providers, based on their ability to provide processes or products and services in accordance with requirements. The supplier shall retain documented information of these activities and any necessary actions arising from the evaluations

3.6. Right of Access

Suppliers and their sub-tier suppliers shall provide to LMUK-A, their customer, regulatory authorities and the Government Quality Assurance Representative (GQAR):

- The right of access to facilities where parts of the contracted activities are being performed including sub-suppliers' premises
- Information pertaining to the fulfilment of requirements in the Contract
- Unrestricted opportunity to evaluate supplier compliance with this document and conduct verification of product conformity to Contract requirements
- Assistance for evaluation, verification, validation, testing, inspection or release of the product to verify that Contract requirements have been accomplished at the supplier's or sub-supplier's premises
- Working area and facilities and the necessary equipment and staff available for reasonable use for performing verification
- Access to documented information in relation to products and services provided to LMUK-A to confirm product conformance to specification

4. Purchase Order Quality Conditions

4.1. QM003-A Quality Requirements for NATO Contracts

QM003-A when indicated on the Purchase Order, statement of work or contract documentation indicates that work or services are for NATO Contracts and demand the full requirements of QM003. Suppliers that provide goods and services for NATO Contracts must implement the additional quality management system requirements of AQAP 2110 or be certified to AS9100. Distributors shall be certified to AS9120 and Calibration Laboratories shall be certified to ISO 17025.

4.1.1. Quality Plan

The Supplier shall submit a quality plan in accordance with AQAP 2105 for high value, high risk or significant NATO contracts when required. An optional form (F0389) is available to use as a template for a deliverable quality plan.

4.2. QM003-B Quality Requirements for non-military contracts

QM003-B when indicated on the purchase order, statement of work or contract documentation indicates that work or services are for non-military contracts and that all requirements of QM003 apply with the exception of those imposed by AQAP 2110, AQAP 2105 and any Defence Standards (Def Stan)

4.3. QM003-C Requirements for Business Supplies

QM003-C when indicated on the purchase order, statement of work or contract documentation indicates that requirements are for business supplies, works or services that have no direct or in-direct effect on the goods and services LMUK-A provide their customer. No quality requirements apply other than goods or services shall conform to purchase order, statement of work and / or contract documentation.

5. Product Traceability, Configuration & Certification

5.1. Traceability

Traceability of the entire supply chain shall be maintained, including traceability to Original Equipment Manufacturer (OEM) where requirement applies for QM003-A & QM003-B Contracts. Traceability reduces risks of counterfeit articles entering the supply chain.

5.1.1. Traceability Requirement Table

Category	Traceability Requirement
Raw Material	Lot traceable to manufacturers part no and batch with original manufacturers MTC (Mill Test Certificate) Type 2.1, 2.2, 3.1 or 3.2
Manufactured Parts	Traceability shall be maintained for all product throughout production from raw material to finished product (including product quantities, split orders, nonconforming product etc.) Raw material used shall be Lot traceable to manufacturers part no, lot no, date code with Mill Test Certificate
Commercial off the Shelf (COTS)	Traceability through supply chain to Original Equipment Manufacturer (OEM)
Modified off the Shelf (MOTS)	Traceability shall be maintained for all product modifications throughout production from material to finished product (including product quantities, split orders, nonconforming product etc.) The originating COTS item(s) shall have Traceability through supply chain to Original Equipment Manufacturer (OEM) Requirements specified for Raw Material & Mechanical/Electrical parts also apply where applicable for item modifications
Electrical, Electronic & Electromechanical Parts	Lot traceable to Original Equipment Manufacturers part no, lot no or date code

5.2. Configuration Management

The supplier shall plan, implement, and control a process for configuration management to ensure the identification and control of physical and functional attributes throughout the product lifecycle. This process shall:

- Control product identity and traceability to requirements, including the implementation of identified changes
- Ensure that the documented information (e.g., requirements, design, verification, validation and acceptance documentation) is consistent with the actual attributes of the products and services

5.3. Certification Documentation

A certificate of conformity is required for all products and services. The certificate of conformity shall be deemed as an authorised contractual guarantee that the goods and services referenced on the certificate meet drawing, specifications, technical data and contract requirements in full.

5.3.1. Calibration Certification

For calibration services a Certificate of Calibration shall be provided confirming that the equipment has been calibrated in accordance with, and meets the requirements of, the applicable national or international standard. The applicable standard shall be referenced on the certificate. Calibration shall be traceable back to the national or international standard or ISO 10012 as applied.

5.3.2. Certificate of Conformity Information

The following information shall be included on each certificate of conformity.

- Certificate or delivery unique reference number
- Certificate Date
- Purchase order number and line item number(s)
- Material master (MM) part number and part description (as stated on the purchase order)
- Batch unique identifier (Batch number / Lot number / Date code / Serial number)
- Quantity
- Supplier Name and Address
- Indication that goods and / or services conform to the specified requirements
- Original Manufacturer's name, part number and lot / date code (when applicable)
- LMUK-A QN numbers for all approved production permits / concessions applicable
- Reference to current First Article Inspection Report (where applicable)
- Reference to the QMS the product is release under (E.g. ISO9001 / AS9100 etc.)

5.4. Documented Information Retention

Suppliers shall retain records relating to processing, testing, calibration, manufacture, supply, configuration, traceability and certification for a minimum of 7 years from end of contract date unless otherwise stated by contract or statutory requirements.

6. Counterfeit Avoidance, Detection, Mitigation & Disposition

6.1. Counterfeit Material

Counterfeit material poses a significant risk to the supply chain, potentially resulting in loss of material, mission or life. Counterfeit material is: -

- An unauthorized copy, imitation, substitute or modified item, which is knowingly, recklessly, or negligently misrepresented as a specified genuine item from an original manufacturer or source.

- A previously used genuine item that has been salvaged or repurposed without disclosure to the customer.

The supplier shall have a defined and documented policy for the avoidance of counterfeit material, including an Anti-Counterfeiting Management Plan (ACMP) in accordance with DEF STAN 05-135.

6.2. Electrical, Electronic & Electromechanical (EEE) Parts

Suppliers that procure and integrate EEE parts into products supplied to LMUK-A shall implement the avoidance, detection, mitigation and disposition requirements of AS5553. Distributors of EEE parts shall be AS6081 certified.

6.2.1. Obsolescence Management

Obsolescence can increase the risk of acquiring counterfeit EEE parts. To reduce the likelihood of purchasing counterfeit EEE parts, electronic equipment manufacturers should proactively manage the life cycle of their products through the use of an Obsolescence Management Plan or Diminishing Manufacturing Sources and Material Shortages (DMSMS) management plan. Suppliers shall notify LMUK-A in a reasonable time if a part is reported to be going obsolete.

7. Production Process Verification & Special Process Validation

7.1. Planning

7.1.1. Define & Review Requirements – Contract Review

The supplier shall determine the requirements can be met at the contract quotation stage. Commonly known as contract review, the supplier shall conduct and document a review process before committing to supply products or services demonstrating consideration for the following: -

- Applicable statutory and regulatory requirements
- Requirements specified by LMUK-A, including the requirements for delivery and post-delivery activities
- Requirements not stated by LMUK-A, but necessary for the specified or intended use.
- Activities are covered in the suppliers QMS scope of certification
- Material and component availability, minimum order quantities (MOQ) and lead times
- Production, assembly, verification and special process capabilities meet requirements
- Drawing and design data characteristics, tolerances and any anomalies or queries
- Any sub-tier or external subcontract approvals and capabilities including the flow down of QM003
- First Article Inspection, End Item Data Pack (EIDP) or other documented information requirement
- Any deviations via a production permit request where LMUK-A requirements cannot be met or only partially met.

It is encouraged that for significant, high value or high risk orders a LMUK-A Supplier Quality Engineer (SQE) may be called upon to assist with the supplier contract review activities.

7.1.2. Competence, Training and Awareness

The supplier shall ensure personnel processing orders or performing work affecting conformity to product or service are trained and aware of the relevance and importance of their activities in relation to meeting the requirements of LMUK-A Contracts and associated documentation.

7.1.3. Business Continuity and Disaster Management Planning

For QM003-A & QM003-B contracts suppliers shall have in place a business continuity plan. This should be in accordance with ISO 22301. This includes requirements to plan, establish, implement, operate, monitor, review, maintain and continually improve a documented management system to protect against, reduce the likelihood of occurrence, prepare for, respond to, and recover from disruptive incidents when they arise.

7.2. Process & Design Failure Mode Effect Analysis

The supplier shall anticipate risks in its processes (including design where applicable) and implement actions to remove or reduce risks. This should be demonstrated through the use of Design Failure Mode Effect Analysis (DFMEA) and / or Process Failure Mode Effect Analysis (PFMEA). The output of the PFMEA should input into process control documentation. For further guidance see AS13004 Process Failure Mode and Effects Analysis and Control Plans.

7.3. Process Control & Documentation

The supplier shall control the production process to ensure configuration control and repeatability. Documented information for activities to be performed and results to be achieved can include process flow charts, control plans, production documents (e.g., manufacturing plans, travelers, routers, work orders, process cards) and verification documents.

7.4. First Article Inspection (FAI)

The primary purpose of FAI is to validate that production processes are capable of producing parts and assemblies that meet LMUK-A engineering and design requirements. A well-planned and executed FAI will provide objective evidence the supplier's processes can produce compliant product and that they have understood and incorporated associated requirements.

7.4.1. AS9102 First Article Inspection Report (FAIR)

A FAIR in accordance with AS9102 shall be submitted electronically prior to first delivery of all products to fai.fc-ampthill@lmco.com. Additional full or partial FAIRs shall be provided when changes listed in AS9102 4.6 f. 1-6 occur. Guidance on the FAIR process is detailed in the LMUK-A First Article Inspection Guidebook.

7.5. Special Processes

A process where the conformity of the resulting output cannot be verified by subsequent monitoring or measurement is referred to as a special process. The below table lists some of the most common special processes incorporated into manufacturing for aerospace, space and defence programmes. Further information is available in SPG01 Special Processes Guidebook

Aerospace, Space & Defence Special Processes Incorporated in Manufacturing		
Welding	**Surface Engineering & Chemical Processing**	**Electronics**
Rotational Friction / Inertia Welding, Torch / Induction Brazing, Flash Welding & Laser Welding, Electron Beam Welding, Resistance Welding, Fusion Welding & Evaluation of Welds	Electroplating, Electroless Plating, Anodising, Chemical Conversion Coatings, Passivation, Painting & Dry-Film, Surface Enhancement, Etching & Chemical Cleaning	Printed Circuit Board (PCB) Manufacture, PCB Assembly (Incl. Soldering), Cable and Harness Assemblies, Conformal Coating, Cell Manufacture & Battery Array Assemblies
Composites	**Elastomer Seals**	**Heat Treatment**
Prepreg, Adhesive Bonding, Resin Film Infusion (RFI), Metal Bonding, Core Processing, Liquid Resin Processing & Compression Moulding	Plate Seals, Fabric / Textile Reinforced Seals, O-Rings & Moulded Shapes	Brazing, Aluminium Heat Treating, Carburizing, Nitriding, Hot Isostatic Pressing, Induction Hardening & Sintering
Materials Testing & Inspection	**Nonconventional Machining**	**Non-destructive Testing**
Chemical Analysis, Mechanical Testing, Metallography, Micro Indentation Hardness Testing, Corrosion Testing, Fastener Testing, Mechanical Testing, Physical Testing, Thermal Testing & Coordinate Measuring Machines (CMM)	Electrochemical Machining, Electrochemical Grinding, Electrical Discharge Machining, Laser Beam Machining, Laser Part Marking & Spark Erosion Grinding	Penetrant Flaw Detect, Anodise Flaw Detect, Magnetic Particle Inspection, Ultrasonic Testing, Radiographic Inspection Testing & Eddy Current Inspection Testing

7.5.1. Validation and Control of Special Processes

Suppliers that perform special processes shall establish documented information for special processes including: -

- Definition of criteria (specifications) for the validation and periodic re-validation of the processes.
- Determination of conditions to maintain the approval
- Approval of facilities and equipment and qualification of persons
- Use of specific methods and procedures for implementation and monitoring the processes
- Record retention of periodic testing (re-validation)

7.5.2. Nadcap

Suppliers are encouraged to obtain or use Nadcap accredited sub-tier suppliers for special processes. Being Nadcap accredited provides assurance that special processes performed are sufficiently validated and re-validated to industry standards and specifications.

7.5.3. Welding

All welding conducted by suppliers and their sub-tier shall be approved and re-approved by LMUK-A supplier quality via successful completion of a special processes welding audit.

7.5.4. Surface Engineering & Chemical Processing

All surface engineering and or chemical processing performed on LMUK-A parts by suppliers and their sub-tier shall be approved and re-approved by LMUK-A supplier quality via successful completion of a special processes chemical processing audit. (or plating process review if the supplier holds Nadcap Chemical Processing accreditation.)

7.5.4.1. Zinc Plating

Suppliers and sub-tier suppliers that Zinc plate parts for LMUK-A unless otherwise agreed shall use Def Stan 21-5 Table 1.6b Process 19-4 standard and Zinc Plate to ISO 2081 Fe/Zn5/A (Clear trivalent passivate). This specification includes the periodic re-validation adhesion testing and accelerated corrosion testing in section 6 of ISO 2081.

7.5.4.2. Paint Systems & Application Process

All painting conducted by suppliers and their sub-tier shall be approved and re-approved by LMUK-A supplier quality via successful completion of a special processes paint audit (or paint process review if the supplier holds Nadcap Chemical Processing accreditation.)
Where products are painted, sufficient conditions shall be met to ensure effective adhesion is maintained in accordance with one of the following acceptance criteria.

- ISO 2409 Table 1 Class 0
- ASTM 3359 Test Method A (X-Cut): 5A (No Peeling or removal)
- ASTM 3359 Test Method B (Cross Cut): 5B (0% Removed).

Periodic re-validation adhesion testing shall be performed on test coupons representative of product substrate and process. Frequency of testing shall be adequate to validate the paint process output. Test records must be maintained traceable to the product.
Refer to ISO 2409 paragraph 12 and ASTM 3359 paragraphs 9 & 14 for test report requirements relative to testing criteria.

7.5.4.3. Surface Finish Acceptance Criteria

Supplied product with surface finishes for functional or cosmetic applications shall be uniform in appearance, free from blisters, lifting or peeling coating, pits, nodules, scratches, stains, cracking or any other defect. This includes but is not limited to electroplated, conversion coated, anodised, painted, mechanically finished and passivated surfaces.

7.5.5. Electronics – Printed Circuit Board (PCB) Manufacture & Assembly

All contract electronic manufacturing suppliers shall be approved by LMUK-A supplier quality via successful completion of a special processes IPC J-STD 001 audit. All electronic printed circuit board assemblies shall meet IPC-A-610 Class 3. Unless otherwise agreed and supported by completion of F0279 Pb-Free Supplier Questionnaire and an approved lead free control plan is in place, all PCB soldering shall be Lead solder.

7.5.6. Cable & Harness Manufacture

Cable and harness acceptance criteria shall meet IPC/WHMA-A-620 Class 3

7.6. Preservation of Product

The supplier shall preserve the product during internal processing, storage and delivery to the intended destination.

7.6.1. Shelf Life

Supplied products containing items with finite shelf life shall have the expiry date clearly identified on the product and the delivery documentation. The remaining shelf life must be a minimum of 80% of the total shelf life for the material at time of delivery unless otherwise specified by LMUK-A.

7.6.2. Packaging, Storage & Handling

The supplier shall adequately plan and ensure that products are protected, packaged and labelled as specified by contract. Where no packaging is specified, the supplier shall package to a standard that will provide adequate protection against damage, deterioration, corrosion, contamination and loss. The supplier shall ensure that the product packaging is labelled to a standard that provides adequate identification and traceability of the product. Any special handling or storage conditions must be clearly documented in the delivery paperwork. For example, temperature and humidity. Hazardous materials shall include appropiate safety data sheets (SDS).

7.6.3. Electrostatic Discharge (ESD)

Product supplied that are ESD sensitive shall be handled, packaged and labelled as such. This includes adequate ESD shielding and dissipative materials. Clear ESD labelling shall be used on external and internal packaging. Suppliers that handle ESD sensitive product must implement the requirements of ANSI/ESD S20.20.

7.6.4. Foreign Object Debris (FOD)

Inclusion of FOD is a nonconformity. The supplier shall establish a process to detect and prevent Foreign Object Debris. This shall be in accordance with AS9146 or NAS412.

As a minimum the process shall include: -

- FOD process review
- Training of FOD practices
- Material handling and product protection
- Tool / hardware accountability
- Lost items search and documentation process
- Physical entry control into FOD critical areas
- Inspection for foreign objects prior to closing apertures and compartments during assembly

7.6.5. Firearms and Weapon Components

Suppliers transporting weapons or weapon component parts must hold a current Home Office approval to transport goods controlled under the Firearms Act 1968, Section 5. For explosive items, the supplier shall contact Head of Safety Services at LMUK-A, 3 business days prior to delivery.

8. Deviations – Production Permit & Concession

LMUK-A expects quality to be built into the design and production process of our product and this is also the expectation of the supply chain. Conformity first is key to the delivery of world class product to our customers and this culture and mindset needs to be throughout the supply chain. LMUK-A relies on the supply chain to deliver conforming product free from defects. All requested deviations are reviewed and approved (or rejected) at a LMUK-A Materials Review Board (MRB). There are two types of deviation; production permit and concession which are described below.

8.1. Production Permit

An intentional deviation, production permits are considered permission to produce an item that deviates from design data. This may be because of design anomalies, material availability issues or other unforeseen reasons. A production permit can only be requested prior to production.

8.1.1. Materials Database

To provide approved alternatives and substitutes LMUK-A maintain a materials database that specifies approved material grades for use based on a classification code system. Where a material classification code is specified on drawing or specification, the Supplier must refer to the LMUK-A Materials Database to identify acceptable material grades for use. When relevant, a specific materials database version reference shall be referenced within the contract. Only the specific materials database version referenced on the contract shall be used by the Supplier. The materials database shall only be used where a related material classification code is specified on the drawing or contracted specification. It shall not be used for legacy drawings that specify a specific material specification.

8.2. Concession

An unintentional deviation, concessions are considered permission to deliver nonconforming product. Requests for concession will only be approved under exceptional circumstances at LMUK-A MRB. Whether approved or rejected, concessions will impact the supplier performance rating. Concession requests must include root cause corrective action. The supplier shall continuously improve processes to achieve a zero concession ethos.

8.3. Request Process

Suppliers must liaise with, and submit the request via the LMUK-A supply chain representative indicated on the contract / purchase order. Suppliers may use their own documentation to submit a request providing the required information is included or F0577 Supplier Deviation Request Form can be used. When submitting a request for concession or production permit, the following information shall be included: -

Required Information for Production Permit and Concession Request	
Suppliers unique reference number	Previous (or similar) deviation QN reference
Type of request (Concession or production permit)	Detail of the requirement
Date of request	Detail of requested deviation from the requirement including associated risks
Supplier name and contact details	Any supporting information, photos, drawings and technical data
MM part number and part description	Root cause corrective action plan to prevent recurrence
Serial number(s) / batch number(s) and quantity	Supplier stakeholder(s) (digital) sign off
Purchase order number and line item number(s)	Fields for LMUK-A sign off, additional comments and assigned QN number

9. Control of Nonconformities

9.1. Problem Solving

When supplier nonconformities exist, the supplier must perform Root Cause Corrective Action (RCCA) to investigate through the causal chain to the root cause and implement corrective actions to address the root cause and prevent recurrence of the problem. It is imperative when conducting RCCA the problem is understood in simple terms. The Root Cause Corrective Action Problem Solving Guidebook is available for further assistance.

9.2. Supplier Corrective Action Report (SCAR)

A Supplier Corrective Action Report / Request (SCAR) Form A-0108 is a Word document that is produced from LMUK-A SAP quality notification (QN) system and emailed to the supplier for completion and return. The form is based on best practice problem solving AS13000 8D methodology including the following sections to be completed: -

- Correct stakeholders and Subject Matter Experts (SME) involved in problem solving activity
- Define and understand the problem
- Containment – Stop the problem at work in progress and stores etc. Agree actions to repair, rework, replace affected product.
- Root cause analysis. Identify the root cause through the causal chain (direct, contributing and root cause)
- Establish corrective action plan to address the root cause to prevent recurrence
- Implement and review corrective action plan
- Identify similar potential root causes elsewhere (Risk and Opportunity) and establish and implement preventive action to prevent occurrence
- Recognition activities through risk and opportunity, lesson learned and PFMEA database. Closure of SCAR

SCARs shall be processed in a reasonable timescale. Typically 5 working days to acknowledge receipt and provide a containment plan and a further 25 calendar days to return the completed SCAR or an equivalent 8D type form. Depending on the risk and impact of the nonconformity further investigation and verification activity may be required by the LMUK-A SQE. The LMUK-A SQE may be called upon to assist with the SCAR process at the supplier as a key stakeholder.

9.3. Supplier Performance Rating

Nonconformances on delivered hardware to LMUK-A are viewed as escapes by the Supplier, and as such will impact the Supplier's performance rating. In addition, late, incomplete or insufficient SCAR responses compound the Suppliers performance rating which influences LMUK-A's future source selection decisions.

10. Lessons Learned

10.1. Chromated Paint Systems & Def Stan 80-225

Def Stan 03-32 is referenced on drawings calling up the application of paint systems subject to restriction set out in the European REACH regulation (EC) No 1907/2006 with the sunset date of 22 January 2019. This means, without authorisation, it is now prohibited to sell or use paint systems containing Chromate on land based vehicles.

As the paint systems referenced in Def Stan 03-32 are now subject to regulatory restrictions the following affected Def Stans were withdrawn and superseded by Def Stan 80-225 in December 2018.

- Def Stan 80-206 Issue 3
- Def Stan 80-207 Issue 3
- Def Stan 80-208 Issue 3
- Def Stan 80-209 Issue 3

In addition, etch primers containing chromate in accordance with BS2X32 are also prohibited for use on anything other than aerospace flying parts. Substitute etch / wash primers are available to use as an adhesion promoter. Over the last 2 years a number of suppliers have failed to understand and adhere to the REACH requirement. Suppliers that are required to apply paint systems must familarise themselves with applicable statutory and regulatory requirements and the requirements set out in Def Stan 80-225.

10.2. Poor Paint Adhesion

The application of a paint is a special process and is not straight forward. It requires defined process control to ensure requirements are met. Over the last 5 years significant costs in production stops, rework, repair and returns have occurred due to poor paint adhesion. As a

minimum suppliers and sub-tier suppliers must ensure that sufficient periodic adhesion testing (validation) is conducted. Acceptance criteria is detailed in the Paint Systems & Application Process section in this document.

10.3. Availability of Defence Standards

Defence Standards (Def Stan) are freely available at no cost by signing up at https://www.dstan.mod.uk/

10.4. RoHS Compliant Zinc Plating

Def Stan 21-5 Table 1.6b calls out ISO 2081 and BS 6338. All Zinc plating shall be RoHS compliant. Only Trivalent Chromate (Cr3+) passivation shall be applied in accordance with ISO 2081 Para 6.3.

QM003 Issue Control

Date	Iss	Clause	Changes	Change by
22-Jun-2016	2	All	Complete re-write of Quality Requirements for Suppliers	Konrad Burgoyne
13-Mar-2017	3	All	Order of Precedence added; Delivery Quality Condition descriptions changed ISO 9001:2008 References removed. Figure 1 Additional Flow-Down Requirement Selection Flowchart amended in line with AQAP 2110 Edition D, AQAP 2110 Edition D (2016) supersedes AQAP 2110 Ed 3, 2120 and 2130; Part marking as per purchase order, design data or drawing added; The supplier shall ensure that full traceability is maintained and can be provided on request throughout the sub-tier supply chain added; Certificates must be traceable to the certifying quality representative or company official on request added; Reference to raw material certification where applicable and name of authorised certifying quality representative or company official removed; Deviation from design data generalised; Shelf life requirement increase to 80% unless otherwise specified; Figure 2 Delivery Documentation Requirement Flowchart added; Requests for deviation permit or application for concession amended in line with current process	Konrad Burgoyne
31-Oct-2017	4	All	Restructure of Document to align with ISO 9001 and AS9100 requirements	Craig White
05-Jan-2018	5	3.6	Addition of Regulatory Authority to 'right of access'	Craig White
30-May-2018	6	4.9.1	Change to C of C requirements (FAI)	Craig White
		4.11.2	Addition of Production Permit term	Craig White
		Appx 2	First Article Requirement clarification on flowchart	Craig White
03-Jul-2018	7	Appx 3	New section added to Appendix 3 to include Special Process Document References & update to Appendix 2	Craig White
27-Feb-2019	8	3.2 & Appx 3,	Re-write of Special Process Approvals and amendment to table	Craig White
		Multiple	Hyperlinks to LM web resources updated and obsolete hyperlinks removed	
21-Dec-2020	9	Multiple	Substantially re-written and restructured.	Jon Hood / Will Cullen
			15/02/2021- Clause 6.1 typo corrected - stated AS9102 not AS9120 for distributors certification. AS9120 added to appendix 3 table.	
05-Jan-2023	10	All	Concise and simplified re-write incorporating lessons learned	Konrad Burgoyne