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SUPPLIER QUALITY REQUIREMENTS (SQR-2)

Business Process

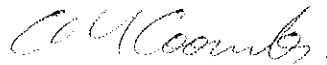
Process Number: SQR-2

Process Title: Supplier Quality Control Requirements for Suppliers

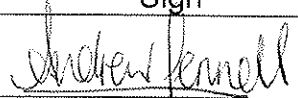
Owning Function: Quality



Approved By: _____
N. Cottell – Director Quality Assurance Europe



C. Coombs – Supply Chain Manager

Issue No.	Date of Issue	Author	Process Owner	Process Owner Sign
1	July 2010	D. Bushell	A. Fennell	

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1.0 Change History

Issue	Reason For issue	DATE
1	New consolidated document for Tewkesbury and Wolverhampton sites based on SQA001 (Aerospace Requirements) and BP1003.	July 2010

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3.0 Associated Documents

3.1 Associated Processes

Process Reference	Process Title
QCI126	Classification of Parts
QCI142	Quality Assurance of New part Manufacture
S Clause S378	Design
SQR 1	Supplier Quality Requirements - Global Minimum Flowdown

3.2 Associated Forms

Form Reference	Form Title
BPF9201i	Second Tier Supplier Approval Form
BPF9201h	8D

4.0 Abbreviations & Acronyms

Abbreviations & Acronyms	Definition
NADCAP	National Aerospace and Defence Contractors Accreditation Program
CAA / JAA	Civil Aviation Authority / Joint Aviation Authority
FAA	Federal Aviation Administration
EASA	European Aviation Safety Agency
FAR	Federal Aviation Regulations
ITAR	International Traffic and Arms Requirements
ISO	International Standardisation Organisation
SQA	Supplier Quality Assurance
ECR	Electronic Change Request
NDT	Non Destructive Testing
FAIR	First Article Inspection Report
NCN	Non Conformance Note
SCAR	Supplier Corrective Action Report
PI	Product Integrity
SPC	Statistical Process Control
MAG-UK	Moog Aircraft Group – United Kingdom
PO	Purchase Order
PDS	Procurement Design Specification
SCD	Source Control Drawing
CofC	Certificate of Conformity
QCI	Quality Control Instruction
EDM	Electronic Discharge Machining
NDT	Non-Destructive Testing
ECM	Electro Chemical Machining
UKAS	United Kingdom Accreditation Service
NAMAS	National Accreditation of Measurement and Sampling
NIST	National Institute of Standard and Technology
AEO	Authorised Economic Operators
FIFO	First In First Out

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5.0 Purpose/Scope

This document defines the quality requirements for ALL suppliers of goods and manufacturing services to Moog Aircraft Group – UK (abbreviated as MAG-UK for the remainder of this document). It is based on the International Standard BS EN ISO 9001:2008, AS9100 and AS9110, it also includes the requirements of regulatory authorities (CAA, JAA, FAA). Varnishes

NOTE: The requirements of this document are supplemental and in addition to the requirements all ready flowed down to a supplier in Moog document SQR1. In the event that requirements in SQR1 and SQR2 contradict each other, for Purchase Orders supplied by MAG - UK, the requirements of SQR2 will take precedence.

Under these requirements, MAG - UK are held accountable for the quality and integrity of all items, work and services used in connection with, or incorporated in, goods supplied by them. MAG - UK require each supplier to comply with the quality assurance requirements set out in this document and to accept full responsibility for the quality and integrity of all items, work and services supplied by them against the MAG - UK purchase order to which they are contractually bound.

This document establishes the requirements for a suppliers quality control system and identifies each of the elements of the system to be established and maintained by the supplier for the purpose of ensuring that supplies and services comply with the contractual requirements.

The systems shall be satisfactory to MAG - UK and to the appropriate Governing Authority if so designated on the purchase order. All enquiries relating to the content and application of this document shall be addressed to:

Manager – Supplier Quality Engineering
Moog Wolverhampton Ltd
Wobaston Road
Wolverhampton
WV9 5EW
Tel: (0) 1902 394336

For the latest revision of this document and MAG - UK Supplier Information, Forms, Processes and S Clauses, please go to the Moog Aircraft Group website at:

www.moog.com/Suppliers/ - Information for Suppliers Shipping to the United Kingdom

6.0 Supplier Quality Requirements

6.1 Quality System Requirements

The supplier shall have a documented quality system that incorporates the requirements of this document. The supplier shall audit the system in accordance with documented procedures. The results of such reviews shall be documented, recorded and made available for examination by MAG - UK upon request.

Changes to the Quality System status, including extensions or reductions in scopes of approval, third party and or regulatory Quality approvals that are either gained or withdrawn must all be communicated to the relevant MAG - UK site 5 working days.

- The supplier shall operate a Quality Management System that is appropriate to the scope of work involved and meets the relevant requirements of ISO9001, AS9100, AS9110 as appropriate and the additional Quality requirements contained in this document.
- A supplier's ISO9001, AS9100 and AS9110 registration may be accepted as evidence of compliance to the ISO9001, AS9100 and AS9110 requirements contained in this document.
- A supplier's EASA Part 21 sub part G approval may be accepted as evidence of compliance to the EASA Part 21 sub part G requirements contained in this document.
- A supplier's EASA Part 145 approval may be accepted as evidence of compliance to the EASA Part 145 requirements contained in this document.
- On environmental issues the supplier must work in accordance with their local authority regulations.
- If performing "special processes" the appropriate NADCAP accreditation must be in place where applicable, or Moog Aircraft Group (MAG) Approved sources.
- Suppliers may only deviate from the requirements of this document with written authorisation by MAG - UK quality personnel.

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It is normal practice for such a system to be administered by a nominated senior person, hereinafter referred to as the "Quality Manager" who shall be technically and administratively qualified and structurally positioned to control the quality of supplies produced against MAG - UK Purchase Orders. In the case where a supplier's resources do not allow the appointment of a Manager solely responsible for quality, then the Chief Executive or equivalent shall undertake the ultimate responsibility for the supplier's quality function.

6.1.1 Supplier Approval & Approved Suppliers

Supplier approval and reassessment is based on a review of a supplier's capability, performance and its quality system. This will involve a supplier questionnaire or desktop review or, where applicable site audits. The frequency of visits will be dependent upon the supplier's CAA, JAA, FAA, FAR 145 & EASA Part 145, Nadcap, AS9100, AS9110 and ISO9001 approvals and the supplier's delivered quality performance to MAG - UK.

Supplier performance is continually monitored with all suppliers being advised when their performance is unsatisfactory. Where a supplier's performance continues to be unsatisfactory this may result in their approval being withdrawn, in such circumstances suppliers will be advised accordingly in writing.

Approved suppliers will be given a notice of approval, which states the scope of approval.

In general all process/product sub contracted to suppliers/sub tiers shall have as a minimum ISO9001 or MAG - UK approval and be recorded on the MAG - UK Approved Supplier List. Any supplier not holding this minimum approval shall NOT be used until written approval has been discussed and agreed with MAG - UK Purchasing/Supplier Quality department. Details shall be submitted to the relevant MAG – UK purchasing agent.

Suppliers performing "Special Processes" (see definition below) shall normally be approved by an initial on-site audit. Approval is maintained by repeat on-site audits every 12 months. Only suitable trained & qualified audit personnel shall perform special process audits. Special process audits shall be conducted using the relevant Moog checklist. All special process suppliers shall hold a relevant corresponding Nadcap approval for each approved process, unless specific authorisation & approval is given by MAG – UK. Solely at MAG UK's discretion, the frequency of re-audits may be relaxed to 36 months where special process suppliers hold relevant corresponding Nadcap approval.

Special processes are generally defined as those treatments and processes covered by the Nadcap accreditation programme (e.g. heat treatment, welding, non-destructive testing, coating, chemical (plating) processes etc.). MAG – UK may also denote other processes such as specialist or proprietary treatments (e.g. Armoloy® thin dense chrome) as a special process.

The use of a MAG - UK approved source does not relieve the suppliers from the responsibility to furnish acceptable supplies.

6.1.2 Use of Non- MAG - UK Approved Sources

- a. The use of non - MAG - UK approved sources must be formally agreed with MAG - UK Supplier Quality Assurance department prior to the placement of any purchase orders. Form BPF92011 (Second Tier Supplier Approval Form) has to be completed by the 1st Tier Supplier and there requested 2nd tier, the form can be obtained from MAG - UK SQA or procurement contact.
- b. Prior to requesting the use of a non - MAG - UK approved source the supplier shall assess the source to ensure it has the capability and will be in compliance with MAG - UK technical and quality requirements.
- c. Through annual audits/reviews the supplier shall ensure the non – MAG - UK approved source continue to be in compliance with MAG - UK quality requirements.

6.1.3 Supplier Security (Tewkesbury Site Only)

Suppliers are directed to the fact that MAG –UK (Tewkesbury) is an Authorised Economic Operators company (an HM Revenue & Customs directive). Therefore, in accordance with the AEO Questionnaire C118 - HMRC 06/07 your attention is drawn to section 5.09. Through approval with MAG - UK you will be asked to confirm that your company has security requirements in accordance with this Questionnaire / Directive. A copy of this document is available via the Supplier web page.

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6.1.4 Right of Entry

Representatives of the Purchaser, the Purchaser's customers and regulatory authorities (JAA/FAA/CAA/EASA etc) shall be granted access to the supplier, and its lower tier suppliers and subcontractors, premises at all reasonable times. Such representatives shall have the right to witness tests and inspections, have access to all technical data relating directly or indirectly to the quality and airworthiness of the product and have the right to evaluate and monitor the conformance to the requirements of this document and the purchase order. Such visits shall not preclude subsequent rejection of the product and does not absolve the supplier of its quality and airworthiness responsibilities.

Where the Purchaser has an on site representative the supplier shall

- Provide accommodation and facilities for the on site representative.
- Allow the on site representative freedom of access at all times to all design / manufacturing facilities, resources, data and records related to the equipment being supplied.
- Establish corrective action plans and implementation dates for any issues raised by the on site representative in a timely manner. Such corrective action plans and implementation dates will require the approval of the on site representative.
- Implement effective corrective actions by the agreed date for issues raised by the on site representative.

The supplier's quality representative shall have the organisational freedom to report quality and airworthiness matters directly to the Chief Executive or equivalent.

The supplier shall ensure that adequate competent and capable staff are available to meet the Purchaser's requirements and that any changes in its organisation or premises do not have any adverse effect on the quality system or the quality of products.

The Repair Station shall not return to service any product that has undergone a maintenance function performed by a non-certified sub-contractor who does not allow personnel detailed above access to perform onsite audits/inspections. Failure to comply with these requirements will result in the sub-contractors removal from the approved suppliers listing and the suspension of all products currently under the control of the Repair Station. (Ref FAR 145.223)

6.1.5 International Traffic and Arms Requirements

"SELLER and PURCHASER shall comply with all applicable export regulations. SELLER shall be responsible for obtaining any required licenses to export the Product and associated technical data to the PURCHASER. SELLER certifies that the Product supplied to PURCHASER is not subject to the International Traffic in Arms Regulations (ITAR)(22CFR Part 120-130) or Export Administration Regulations (EAR) (15CFR Parts 730-774). SELLER shall obtain PURCHASER'S prior written approval prior to incorporating any item, technology or software that is subject to the ITAR or EAR into the Product. SELLER shall complete PURCHASER'S Export Supplier Certification Form providing required export classification information (e.g., U.S. Commerce Control List, United States Munitions List category or UK Control List category, Harmonized Tariff Schedule, Country of Origin, etc.) as well as copies of relevant export authorizations permitting export or re-export to PURCHASER or PURCHASER'S designated end user."

6.1.6 Contract Review

- a. Contract and purchase order reviews must be undertaken by personnel having the relevant knowledge and experience and must take into account the risks associated with new technology and short delivery timescales. **Reviews must ensure the supplier has the capability, capacity and resources to meet all of the Purchaser's requirements.**
- b. Contract specific quality requirements and applicable text ID's shall be identified on the Purchase Order.
- c. Suppliers must ensure they are in receipt of the correct issue of all documentation invoked by the design, quality plan, contract and purchase order. The latest issue of the documentation is required for all work except where the design, quality plan, contracts or purchase order shows a different issue number of the invoked document. (When the supplier does not hold the latest issue of a document they must contact the relevant MAG – UK purchasing agent.)
- d. The order of precedence for MAG UK contract requirements is as follows: -
 - I. Design, Part drawing and/or process specification
 - II. Purchase order

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- III. Supplier quality requirements
- e. No departure from the drawing, specification, purchase order or quality plan is allowed unless agreed by drawing change, order amendment or TipQA electronic approval.
 - f. All contract queries must be resolved between the customer and supplier before component delivery date commitment.
 - g. Verbal instructions, which change any aspect of the drawing, specification, purchase order or quality plan must not be accepted no matter from whom they originate.
 - h. If a supplier wishes to propose or request a change to a drawing or specification they must submit an Engineering Change Request (ECR) to the MAG - UK contact shown on the purchase order. For equipment that has been designed by the supplier this shall include supplier drawings shown on either the MAG - UK drawing or the supplier's parts list. ECR forms are available from the MAG - UK purchasing agent.

6.1.7 Records of Objective Evidence/Record Retention & Storage

Quality Records shall be stored in a suitable, controlled environment e.g. a building that affords protection against physical risks against loss or damage, with suitable heating and ventilation to avoid damage from condensation or damp penetration. The buildings shall hold a valid fire certificate.

- a. Essential records (inc Quality records) must be retained for the life of the equipment in service use plus two years. Where an essential record is retained as a microfilmed copy then if the original record is, or may be, destroyed the microfilm copy must be authenticated as a true copy.
- b. Essential records are those that provide evidence of the quality or airworthiness of the product and include material certificates, lower tier supplier and subcontractor certificates of conformity, manufacturing and assembly documentation, X-ray films, release certificates and any records associated with the product design and certification.
- c. Quality records shall be legible and stored so they are readily retrievable. These records shall be stored in a suitable environment that provides minimal risk of damage or deterioration and prevents loss
- d. In the event of termination of contract, insolvency, or upon request, all quality records applicable to the pursuance of a MAG - UK contract must be surrendered to MAG - UK.
- e. Quality records include the following, but not exhaustive list:
 - Suppliers Release Documents e.g. Approval Certificates of Conformity.
 - Test Reports, Material Certification, Chemical Analysis.
 - NDT Flaw Charts, Route Cards/Travellers.
 - Non-Conformance Notes/Reject Notes.
 - FAIR's
 - Contract Review
- f. Before any original record relating to a MAG UK contract is destroyed or moved significantly, permission to destroy shall be sought from the Supplier Quality Department.
- g. Any deviations to the above requirements shall be sought by written authorisation from MAG - UK quality personnel.

6.1.8 Non-Conforming Product (Technical / Administrative) & Deviation Requests

The supplier shall maintain procedures to ensure that product that does not conform to specified requirements is prevented from unauthorised shipment to MAG - UK. When the supplier intends to supply any non-conforming product, permission shall be obtained through TipQA and authorised with appropriate disposition 'Repair', 'Use as is', 'Not acceptable' etc. The Supplier shall ensure that when required to ship product, both the Product Packaging and Release Documentation quote a valid date (not expired) and appropriate TipQA Non-conformance number. Failure to comply with the appropriate identification of Product with the TipQA approval number will be classified as a non-conformance and the issue will be handled as per the below non-conformance investigation;

Nonconforming material, castings or forgings must not be salvaged, repaired, reworked or reclaimed unless authorised in Writing by MAG -UK.

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Where non-conforming Product or Release Documentation (administrative issues) is identified, this will be communicated back to the Supplier as a non-conformance via TipQA. The Corrective will be raised and sent to the relevant supplier contact for immediate corrective action.

On receipt of a Corrective Action, the supplier is requested to: -

- Consider the details of the recorded non-conformance/corrective action and request clarification if necessary from the raiser of the Corrective action.
- Complete and respond to both the containment and whole corrective action requirements within the timeframe indicated on the non-conformance notification.

When requested by MAG - UK, the supplier must provide a response in the format of an 8D (a copy of the MAG - UK 8D form can be found on the Moog UK Webpage. Link identified within Section 5). Where the supplier has a Corrective action/root cause analysis procedure that covers the requirements of the MAG - UK 8D then the supplier's documentation may be used.

6.1.9 Corrective and Preventive Action

- a. Causes of nonconformities shall be investigated to a degree appropriate to the magnitude of the problem and commensurate with the risks encountered.
- b. Timely corrective and preventive action shall cover the actions taken on the non-conforming items, stores stock and work in progress together with the actions taken to prevent recurrence on future deliveries of the item and other products.
- c. MAG - UK must be advised immediately when a supplier identifies that an implemented action has not been effective.

6.1.10 Statistical Techniques

- a. Suppliers are responsible for understanding and reducing the variation within their processes, and are encouraged to use control-charting techniques. When control charting is not performed, sample inspection by attributes shall be performed to BS6001 Part 1 (ISO 2859-1) or an equivalent plan approved by MAG - UK.
- b. Where a statistical technique is a requirement of the purchase order, drawing or quality plan the supplier must ensure they understand MAG - UK requirements and that appropriate training is provided to personnel who will perform the technique.
- c. Where a drawing has a key characteristic or SPC requirement the supplier shall sequentially measure and record the measurement result. On request the supplier shall provide statistical data to demonstrate control and capability.

6.1.11 Source Inspection

Where the Supplier is notified that MAG - UK wish to carry out a Source Inspection activity, MAG - UK shall conduct this at the supplier facilities. The supplier shall notify the MAG - UK Purchasing representative at least five (5) working days prior to when items will be ready for inspection/test.

6.1.12 Acceptance Test Reports

Where requested by the MAG - UK drawing and or Purchase order, include with each shipment two (2) copies of the results of the lot or item acceptance tests required by the applicable procurement specification. Where measurable limits are established by the specification, the report shall indicate the limit and actual values obtained. The report must contain the signature of an authorised representative of the agency performing the tests.

6.1.13 Handling, Packaging and Preservation

- a. The Supplier shall ensure that all products, for final destination to MAG - UK, are suitably handled and packaged to protect the product and prevent damage, this includes in transit activities and part-to-part contact.
- b. Where applicable, MAG drawings may specify Handling, Packaging and Preservation requirements. If this is the case then these requirements MUST be adhered too.

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- c. Where doubt is raised over a specific method of packaging product, please contact your MAG - UK buyer.
- d. Completed product shall be suitably cleaned and, if required, protected using an appropriate corrosion preventative, prior to packaging.
- e. Packaging and preservation must ensure that delivery is free from damage, corrosion or other forms of deterioration.
- f. Any special storage or environmental requirements shall be defined by the supplier and clearly indicated on the package.
- g. Further specific packaging requirements will be included on MAG - UK drawing notes where applicable.
- h. All incoming material and goods must be held in a quarantine store or area until proof of compliance to requirements is established.
- i. Acceptable material and goods must be held in a secure area with restricted access. Items must be identified to provide traceability to incoming certification. Issue shall be documented to provide history and traceability and should be on a First-in-First-out (FIFO) basis.
- j. Items held pending use or delivery must be handled and stored so that the risk of damage and deterioration is minimised.
- k. Limited life products shall have their storage expiry dates identified.
- l. All Rubber and PTFE parts must be packed and identified in accordance with British Standards specifications F68 and F69 or SAE ARP 5316. Group A or B rubbers must have a minimum of 80% of applicable shelf life remaining when received at MAG - UK.
- m. No parts must be packaged in bags that are closed by metal staples. Bags should either be tied, self-sealing, heat-sealed or sealed using adhesive tape.

6.1.14 Obsolescence Reporting

In the event of any risk of either confirmed or potentially obsolete product, materials or services, the supplier shall contact the relevant MAG - UK buyer and complete an Obsolescence Status Report.

6.1.15 Control of Customer Supplied Product

- a. Where MAG - UK supplies materials or parts only these shall be used for MAG - UK orders. Manufacturing records must provide traceability to the source.
- b. The supplier shall ensure that all gauges, jigs, fixtures, templates and tools provided by MAG - UK are traceable and maintained in a satisfactory condition.
- c. The MAG - UK contact must be advised when any MAG - UK supplied item is lost, damaged or is otherwise unsuitable for use immediately from receipt.

6.1.16 First Article Inspection

Purpose: The purpose of FAI is to give objective evidence that all engineering, design and specification requirements are correctly understood, accounted for, verified and recorded.

Scope: FAI is applicable to aircraft components, sub-assemblies and assemblies supplied to MAG-UK, considered by quality assurance to be desirable or when required by the customer. The table below details the type of FAI to which the parts are to be subjected dependant on the configuration or supply of the parts. FAI is not required for Standard Parts.

Definition: The "First Article" in the context of this procedure is an article, sub-assembly or assembly taken from the initial production lot/ batch, identified and controlled through manufacture, assembly and test which is then finally subjected to FAI. FAI defines the activity of performing / reporting the detailed results from 100% inspection of all dimensions / parameters to ensure total compliance with the drawing / specification requirements.

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Forms: Forms covered under the FAI requirement should conform to aerospace standards as given within AS/EN/SJAC9102. Moog Forms, Check sheet and instructions are available via the Moog supplier webpage identified within section 5.0 of this procedure. It is preferred that the First Article Inspection Report forms identified on the Moog Supplier Webpage can be used, however forms in the format of AS/EN/SJAC9102 latest revision are acceptable.

The type of FAI that parts will be subject to is dependant on the supply and configuration of parts. The table below gives details of the requirements: -

Supply / Configuration of parts	FAI Requirements
New part number.	Full.
New configuration / build standard	Partial.
New drawing revision / issue.	Partial.
New supplier (Finished parts)	Full.
New supplier (Offload / processing)	Partial.
Significant process / route change. (Potential to affect fit, form or function)	Full.
Change of release address.	Full.
Proprietary finished parts.	Special *
Standard catalogue parts i.e. AGS, BS, MS etc.	Certificate of Conformance only
Lapse in production of 2 years or greater.	Full
Man made or natural event	Full

* Special FAI. Documentation required to prove conformance to design / specification requirements. All installation features must be checked and reported. All material, processes and treatments must be reported including full traceability.

Note – Any of the above can be superseded by specific customer requirements. See specific contract / purchase order for details.

6.1.17 Process Evolution Control – Change Management.

Once a component has passed development/sample stage and First Article Inspection (FAI), it is considered as in consecutive manufacture and the process shall be considered as frozen.

All products supplied to MAG - UK are subject to Change Management, therefore certain changes are NOT permitted without prior notice, discussion and written approval from MAG – UK Purchasing/Supplier Quality department. It is a contractual requirement of MAG - UK that unapproved changes to process are NOT permitted. Therefore, any changes found to an approved process are deemed as a breach of Contract.

In brief, changes NOT permitted without prior consent include: (also refer to FAI above): Location, Manufacturing Method, Manufacturing sequence of events, including additions and removal of Processes, Special Processes, Supplier Change including In-house to Subcontract Manufacture and vice versa, Sub Tiers, Material, Test Specification, Fit/Form/Function.

If the supplier is intending to perform any of the changes, as outlined above, then they should contact their relevant Purchasing agent or failing that the Quality Department.

6.1.18 Design

Suppliers responsible for the design of equipment shall meet the applicable requirements of AS9100 and, for civil aerospace equipment the relevant parts of EASA Part 21 subpart J.

Further details on Design are referenced within S Clause S378

6.1.19 Control of Documents and Technical Data

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- a. The supplier shall control all documentation and data received from MAG - UK. This control must ensure:
 - Design requirements are incorporated into manufacturing instructions.
 - Current issues of documents and data are readily available to personnel who need access to perform their duties.
 - Current issues of drawings and test schedules are available at the manufacturing work locations
 - Invalid/obsolete documents and data are removed from work locations or otherwise assured against unintended use.
- b. Controlled copies will be endorsed with an official copy stamp. Such specifications must be segregated from specifications supplied by other companies.
- c. The use of erasable INK, FELT TIPPED PENS AND PENCIL is PROHIBITED on all documentation due to their susceptibility to UNAUTHORISED alteration and also because of the liability of some types to fade. Errors/incorrect entries on records will be lined through with a single line and a statement appended and initialled by the originator explaining the reason for the correction.
- d. It is the responsibility of the supplier to have up to date copies of applicable National and international documents.
- e. **"THE USE OF TIPPEX OR SIMILAR AGENTS TO COVER ERRORS WILL NOT BE ACCEPTABLE."**
- f. In addition to the suppliers existing "in-house" Quality Procedures, the supplier is required to implement all relevant MAG - UK instructions, which may be issued relating to specific aspects of Quality Assurance. In any instance where the subcontractor's procedures do not comply with MAG - UK requirements, the latter shall prevail unless agreed in writing by MAG - UK Quality Assurance.
- g. Where drawings, specifications or MAG - UK Purchase Orders state that supplies should be subject to special controls then all in-house manufacturing documents shall be endorsed or annotated accordingly. All drawings, layout sheets and measuring equipment provided to the Supplier for completion of a subcontract operation (e.g. machining or process) must be returned with the goods.
- h. The supplier shall maintain a control system which ensures that the location of all drawings, specifications, technical data, etc. is known and that they are at all times maintained in good condition and at the correct issue standard. No work should commence until all relevant documents relating to the purchase order are received, recorded and administered as required.

6.1.20 Purchasing

- a. Unless formally agreed with MAG - UK Quality Assurance, suppliers shall only purchase services or goods from MAG - UK approved sources, details of such sources are available from Moog Website identified within Section 5.
- b. Purchase orders raised on lower tier suppliers must contain the statement **"IN PURSUANCE OF A MAG - UK CONTRACT"** together with all clauses contained in the MAG - UK purchase order e.g. FAI, supplier quality requirements. In the case of treatments and NDT all relevant specifications detailed on the drawing and/or PO must be quoted.
- c. Purchase orders on lower tier suppliers shall clearly describe the product ordered and must be reviewed and approved for adequacy prior to release.
- d. Purchase orders for subcontracted design work must invoke the supplier's PDS / SCD and the quality requirements invoked on the MAG - UK purchase order.
- e. Suppliers are responsible for the control of their suppliers and subcontractors.

6.1.21 Purchase of Raw Material

- a. Orders for bar, sheet and tube must state the required metallurgical conditions.
- b. Orders for forgings and castings must state the drawing requirements and where applicable the related Inspection Schedule.
- c. The supplier must ensure that certification has been received for each cast / melt of material and that C of C provide traceability to the mill and mill certificate.
- d. The supplier must ensure that the chemical properties, mechanical properties and hardness results on the mill certificate correspond to the material specification and material condition.

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- e. The received physical condition and identification of raw material must be compatible with the C of C and mill certificate, in relation to the specification and melt / heat number.
- f. After acceptance each piece of raw material must be physically identified with a unique number that is traceable to mill certificate.
- g. Refer to QCI 126 (MAG-UK Wolverhampton procedure only) for specific material controls when manufacturing Class 1 critical/Vital parts.

6.1.22 Forging and Casting

- a. Suppliers must not place purchase orders for forgings and castings unless all sample proof inspections have been approved by MAG - UK. Where material is ordered for parts that will be heat-treated provision for test pieces must be allowed for.
- b. Certificates of conformity, mill certificates and test reports must be traceable to the source of manufacture and provide the assurance that the item meets all requirements. Class 1 and Class 2 castings must have been released as accepted by X-ray to the relevant MAG - UK specification.
- c. Forgings and castings must be identified with cast / melt identity either on the part, on attached tags, or on the container.
- d. Receipt inspection of each batch must include checks for mismatch, surface finish, dimensional accuracy, damage, protection and test pieces.
- e. Castings must be checked to ensure no detrimental core movement is evident and that cross jointing is acceptable.

6.1.23 Traceability and Product Identification

Controls shall be established to ensure that individual articles and materials and lots thereof are identified and segregated from all other articles, materials and lots at all times. Records for articles shall indicate the part number, revision level, lot number and if applicable the serial number and associated detailed information. Records for materials shall indicate type, condition applicable specification and associated detailed information.

The identification and record controls shall provide the capability of tracing backwards to materials from which fabrication originated and forward to determine the location of like articles or materials within a level of process or assembly.

Supplier identification system shall ensure that article and material procurement, fabrication, processing, inspection and test records are organised so that these records and the related articles and materials may be located and retrieved in the event of verification or removal, or recall of articles or materials becomes necessary.

Material or articles furnished by MAG - UK for outside operations must remain identifiable with the MAG - UK supplied lot number or serial number which appears on the MAG - UK documentation and must be recorded on all applicable supplier paperwork.

- a. For detail parts and un-serialised assemblies the traceability code shall consist of the supplier identity code followed by a unique job / batch number that is traceable to the material source and method of manufacture. E.g. IW-12345 (International Widgets job number 12345)
- b. For detail parts identified as Class 1 critical or identifiable by the drawing the traceability code shall be as above with the addition of an oblique separator then a number from 1 to the total number in the batch. e.g. IW-12345/1, IW-12345/2 etc
- c. For serialised products the format of the traceability code is dependent upon the customer. Suppliers must obtain confirmation in writing from the relevant MAG - UK Division of the format of the serial number for each product.
- d. Parts must be marked in accordance with drawing requirements including TipQA approval number if applicable.

6.1.24 Special Processes

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- a. Personnel carrying out NDT inspections shall be certified in accordance with the applicable MAG - UK NDT specifications. Suppliers shall supply authenticated copies of NDT personnel certificates and NDT inspection results on request.
- b. A relevantly qualified NDT Level 3 must approve all techniques.
- c. Suppliers performing welding, brazing, EDM and ECM operations must have the technique and a sample approved by a MAG - UK approved laboratory prior to production.
- d. Suppliers must ensure techniques and facilities for special processes are controlled and must retain records of conformance checks.
- e. Suppliers of castings not approved to sentence X-rays to the relevant specification shall use a MAG - UK approved independent X-ray source.
- f. In order to avoid parts being returned as Non Conforming, and unless otherwise advised, Suppliers of Special Processes shall ensure that all Certificates of Conformance show clear traceability to Nadcap approval. Where machined product is subcontracted for Special Processes, copies of Certificates of Conformance MUST be provided clearly showing the suppliers Nadcap approval reference.

6.1.25 Test Pieces

- a. Test pieces must be identified with a unique material batch number, the material specification and condition and the heat/melt number.
- b. Test pieces must be processed by a MAG - UK approved source. After processing, they must be examined and tested by either a nationally accredited test house or MAG - UK approved source. Failures must be reported to the relevant MAG - UK Division.
- c. Test piece results must be retained as a quality record and must provide traceability to the part, material, manufacturing source and manufacturing process.
- d. Confirmation of test piece results together with the test certificate number must be recorded on the manufacturing documentation.

6.1.26 Inspection and Testing

Suppliers shall develop and maintain inspection procedures and records of inspection. The inspection system will evaluate product and/or processes to the extent necessary to ensure that only hardware and services that conform to the drawing and purchase order requirements are delivered to MAG - UK. Product shall be visually inspected to a minimum of 10x magnification unless otherwise specified.

- a. C of C must cover all supplier Sub Contracted operations relating to MAG UK purchase orders.
- b. Incoming goods must be inspected or otherwise verified as conforming to the drawing or specification requirements prior to use, records must be retained.
- c. The supplier shall maintain quality records that show the product has been inspected and / or tested during all stages of manufacture. The records shall identify the individual who certified the results and where applicable include the results of the inspections and tests.
- d. No product shall be despatched until conformance to the specified requirements has been verified.

6.1.27 Inspection and Test Status

- a. The inspection status of the product throughout production must be identified by the use of unique identity. Metal stamps must not be used on detail parts or assemblies.
- b. If applicable stamps or electronic identification must be traceable to the individual.
- c. Stamps will be issued to suitably qualified individuals; their use shall be restricted to the person to whom it was allotted.
- d. The supplier shall maintain records of stamp holders, scope of authority and issue / withdrawal dates. If a stamp is withdrawn it must not be re-issued to any other person until a minimum of six months has

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elapsed. Should a stamp be lost the number must not be reallocated for a period of time indicated by the supplier within their own procedure.

- e. Stamp holders must keep their stamps in their possession. Periodic checks must be made to assure availability and legibility of stamps.

6.1.28 Control & Calibration of Inspection, Measuring and Test Equipment

Calibration of measuring and test equipment used for product acceptance shall be traceable to established international or national measurement standards (e.g. UKAS, NAMAS, NIST). Procedures for periodic calibration, certification and maintenance of tools and equipment shall be established and followed.

- a. All inspection, measuring and test equipment (includes equipment not owned by the supplier and all jigs, fixtures and tooling used for inspection or measurement) must be calibrated prior to use.
- b. The calibration system used by the supplier must be to the satisfaction of MAG - UK. A system that meets the general requirements of ISO10012-1 will be satisfactory.
- c. Calibration must be to defined techniques and calibration intervals. Calibration records must be retained for 5 years.
- d. Calibrated equipment must be identified so that the calibration status is readily identifiable.
- e. Calibration must be traceable by certification to the equipment manufacturer or laboratories holding UKAS accreditation for the equipment they are calibrating. Where laboratories are outside the UK they must hold an equivalent approval.
- f. When calibrated equipment is found to be out of calibration the supplier shall assess and document the validity of previous inspection and test results.
- g. The handling, preservation and storage of inspection, measuring and test equipment must ensure that the accuracy and fitness for use are maintained.
- h. It is the responsibility of the Supplier to return all MAG - UK loaned measuring equipment to the relevant Purchasing agent identified on the Purchase Order prior to calibration expiry date or the when the Sub contract order has been fulfilled.
- i. If calibration of equipment/gauges is conducted by an external agency they must be identified on the approved suppliers list.

6.1.29 Mandatory Occurrence Reporting

Suppliers must advise MAG - UK Quality Department immediately that they become aware of a defect or occurrence of an hazardous or potentially hazardous nature which endangers, or if not corrected would endanger, the aircraft, its occupants, or any other person or property. MAG - UK must be advised of all relevant information; either email or letter must follow verbal telephone reports.

6.1.30 Delivery

- a. All products delivered to MAG - UK must be accompanied by an authorised (signed) and serialised C of C (or Advice Note where authorisation is provided by the receiving site Quality department) which includes a statement substantially as follows: -
The supplies have been inspected and, where applicable, tested and conform in all respects with the requirements of the purchase order and fully to the standards / specifications quoted therein.

The document data shall include, as a minimum, the MAG - UK part number, MAG - UK drawing revision, process specification number if applicable, purchase order number, quantity, date shipped, manufacturer's name, traceability data (e.g. melt or heat number, batch, date code or cure date) and the supplier's authorised representative signature and/or stamp.
- b. Units repaired or modified under JAR145 or FAR145 and delivered to either MAG - UK or the customer, units must be accompanied by an authorised JAR Form One or FAA Form 8130-3 as applicable.
- c. Where MAG - UK has formally advised a supplier they are to deliver parts direct to MAG - UK customer, deliveries must be accompanied by
 - An authorised JAR Form One and certified in accordance with NAA regulations.

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- An authorised serialised Certificate of Conformity that includes the statement above.
- d. Release documentation from all suppliers (including stockists and distributors) must provide traceability to the work carried out and source of manufacture by referencing relevant information as follows:
 - MAG-UK Part number, drawing revision
 - Process Specification
 - Purchase Order number
 - Quantity of parts
 - Source of manufacture
 - Sources of raw material, heat treatments, surface treatments, NDT and specialist machining e.g. EDM.
 - Accompanying C of C numbers.
 - If applicable First Article reports, TipQA Non-conformance/Corrective action reference numbers.
 - Kit of parts traceability (see paragraph 6.1.37).
 - Suppliers authorised representative signature and/or stamp
- e. Copies of the stockist's C of C, Mill Certificates and other certification that provides traceability must accompany deliveries of product and or raw material unless informed otherwise in writing.
- f. For limited life products the C of C, containers and packages must show shelf life and expiry date limitations.
- g. Suppliers of seals and rubber goods shall ensure that there is at least 80% of the applicable shelf life remaining.
- h. On request, a completed Build and Test Record must be submitted with assemblies, which are the subject of a test.
- i. Any part returned to the supplier must not be re-submitted to MAG - UK without reference being made to the previous rejection.
- j. Products that were subject to First Article Inspection must be identified on the release documents and accompanied with a First Article Report. For assemblies and kits of parts a FAIR is required for each detailed part.
- k. Any hazardous material must comply with the relevant COSHH requirement.
- l. Where parts are to be delivered incomplete to the PO requirements written agreement must be obtained in advance from the relevant MAG - UK site.
- m. Where parts are delivered incomplete/part finished the C of C must reference the agreement, define the work required to complete and be clearly endorsed / stamped: - **WARNING PARTS INCOMPLETE.**
- n. All suppliers Advice notes to clearly state MAG - UK part number as referenced to on official purchase order, the PO number must also appear on the advice note.
- o. Where applicable, SPC results and analysis of the SPC conducted during the manufacture of key characteristics shall be submitted with the relevant consignment.
- p. Consignments of more than one part number must have each line item separately packed and clearly identified with MAG - UK part number, Packed in this manner it is acceptable for the parts to be supplied in the same box/container.
- q. When invoked as part of order requirements, the results from conducting system QC! 142 New Part Manufacture are to be submitted with the first production batch (**MAG- Wolverhampton req'ment only**).

Note: MAG - UK reserves the right to reject goods back to the supplier, which upon delivery do not conform to all of the mandatory requirements within Section this section.

6.1.31 Internal Quality Audits

The supplier must annually audit their facility against the requirements of this document and applicable processes / NDT spec's. Records of the audits and actions taken against any non-conformances found must be retained for 2 years.

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6.1.32 Training

- a. Suppliers shall ensure that all personnel performing activities on MAG – UK product, affecting quality have been suitably trained. Personnel performing assigned tasks must be qualified on the basis of appropriate education, training and / or experience.
- b. The supplier shall ensure **ALL** staff are identified on a skills matrix or have training records that identify they have the relevant skills to carry out their allocated tasks.

6.1.33 Servicing

A supplier responsible for the design of a product shall provide copies of maintenance and spares data if required by MAG - UK.

6.1.34 Electrostatic Discharge Protection

Static sensitive devices classified by the drawing or by the nature of the product must be properly handled, packaged and labelled as per BS EN 100015-1 or MIL-STD-1686.

6.1.35 Repair Station requirements

Note – It is the Repair Stations policy that parts requiring removal are replaced only with new components. Interchangeability of parts is not permitted without prior approval granted by the Repair Station Quality Manager or nominated delegate.

6.1.36 Process Control & Class 1 Critical

- a. Class 1, identifiable and critical parts (Procedure QCI126) will be identified as such on the drawing.
- b. Only Suppliers who are identified on the MAG UK approved suppliers list and have Class 1 critical approval within their Scope of approval can manufacture Class 1 Critical parts
- c. Manufacturing and assembly must be carried out under controlled conditions and be defined by written manufacturing work instructions which specify the content and sequence of each operation, workmanship / acceptance criteria and ensure traceability. The instructions for CLASS 1 IDENTIFIABLE and CRITICAL parts must be annotated accordingly. The manufacturing work instructions should be submitted to the relevant Moog Wolverhampton Ltd personnel for approval and thereafter sealed.
- d. The relevant Moog Wolverhampton Ltd personnel must be formally advised of any changes to the manufacturing process of Class 1 critical and identifiable parts.
- e. No changes are allowed to the manufacturing process of critical parts without the written authority of the relevant Moog Wolverhampton Ltd personnel. Proposed changes must be submitted to the relevant personnel of Moog Wolverhampton Ltd.

6.1.37 Kits of Parts

Kits of part must be accompanied by a serialised 'fly sheet/Tag' co-related to the applicable C of C. The 'fly sheet'/tag must show the traceability of each part and its processes contained in the kit. Information to be included on the flysheet is as follows:

- Part number and drawing issue
- Description
- Job or Batch number
- Raw material specification
- Raw material supplier and C of C reference
- Lower tier process and NDT specifications
- Lower tier process and NDT sources and C of C references
- Lower tier machining sources (for example EDM) and C of C references

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- When applicable cross reference to first article report